Test Report

Industry Canada RSS-Gen Issue 3/RSS-210 Issue 8
FCC Part15 Subpart E

Product Name	:	802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card
Model No.	:	BCM94352HMB
FCC ID	:	QDS-BRCM1068
IC	:	4324A-BRCM1068

Applicant	:	BROADCOM CORPORATION
Address	:	190 MATHILDA PLACE SUNNUVALE, CA 94086, U.S.A.

Date of Receipt	:	11/03/2013
Test Date	:	12/03/2013~26/03/2013
Issued Date	:	10/04/2013
Report No.	:	133S021R-RF-US-P09V01
Report Version	:	V1.2

Test Report Certification

Issued Date : 10/04/2013
Report No. : 133S021R-RF-US-P09V01

QuieTek

Product Name	:	802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card
Applicant	:	BROADCOM CORPORATION
Address	:	190 MATHILDA PLACE SUNNUVALE, CA 94086, U.S.A.
Manufacturer	:	BROADCOM CORPORATION
Address	:	190 MATHILDA PLACE SUNNUVALE, CA 94086, U.S.A.
Model No.	:	BCM94352HMB
FCC ID	:	QDS-BRCM1068
IC	:	4324A-BRCM1068
EUT Voltage	:	3.3V
Brand Name	:	Broadcom
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart E: 2012 ANSI C63.4: 2009; KDB 789033
Test Result	:	Complied
Performed Location	:	Suzhou EMC Laboratory No.99 Hongye Rd., Suzhou Industrial Park Loufeng Hi-Tech Development Zone., Suzhou, China TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098 FCC Registration Number: 800392; IC Lab Code: 4075B

Documented By	:	Alice Ni
Reviewed By	:	Jane Yuan
Approved By	:	Robin Wu

Laboratory Information

We, **QuieTek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted(audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scope:

Taiwan R.O.C.	**:**	**BSMI, NCC, TAF**
Germany	**:**	**TUV Rheinland**
Norway	**:**	**Nemko, DNV**
USA	**:**	**FCC, NVLAP**
Japan	**:**	**VCCI**
China	**:**	**CNAS**

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site :http://www.quietek.com/tw/ctg/cts/accreditations.htm
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

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1. General Information

1.1. EUT Description

Product Name	802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card
Brand Name	Broadcom
Model No.	BCM94352HMB
EUT Voltage	3.3V
Frequency Range	**For 2.4GHz Band** 802.11b/g/n(20MHz): 2412~2462MHz 802.11n(40MHz): 2422~2452MHz **For 5.0GHz Band** 802.11a/n(20MHz): 5180~5320MHz,5500~5700MHz,5745~5850MHz 802.11n(40MHz): 5190~5310MHz,5510~5670MHz,5755~5795MHz 802.11ac(20MHz): 5720MHz 802.11ac(40MHz): 5710MHz 802.11ac(80MHz):5210MHz, 5775MHz
Channel Number	For 2.4GHz Band 802.11b/g/n(20MHz): 11 802.11n(40MHz): 7 For 5.0GHz Band 802.11ac: 4 802.11a/n(20MHz): 14 802.11n(40MHz): 9
Type of Modulation	802.11b: DSSS
	802.11a/g/n/ac: OFDM
Data Rate	802.11a/g: 6/9/12/18/24/36/48/54 Mbps
	802.11b: 1/2/5.5/11 Mbps
	802.11n: up to 300 Mbps
	802.11ac: up to 866.7 Mbps
Bluetooth Specification	3.0HS + Version 4.0
Bluetooth Frequency	2402~2480MHz
BT Channel Number	79 for 3.0HS; 40 for Version 4.0
BT Channel Separation	1MHz for 3.0HS; 2MHz for Version 4.0
BT Type of Modulation	FHSS
BT Data Rate	V3.0+HS: 1Mbps(GFSK), 2Mbps(Pi/4 DQPSK), 3Mbps (8DPSK) V4.0: 1Mbps(GFSK)
Channel Control	Auto
Antenna Delivery	2*Tx + 2*Rx
Antenna Type	Reference to Antenna List
Peak Antenna Gain	Reference to Antenna List

For 2.4GHz Band

802.11b/g/n(20MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
01	2412 MHz	02	2417 MHz	03	2422 MHz	04	2427 MHz
05	2432 MHz	06	2437 MHz	07	2442 MHz	08	2447 MHz
09	2452 MHz	10	2457 MHz	11	2462 MHz	N/A	N/A
802.11n(40MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
03	2422 MHz	04	2427 MHz	05	2432 MHz	06	2437 MHz
07	2442 MHz	08	2447 MHz	09	2452 MHz	N/A	N/A

For 5.0GHz Band

802.11a/n(20MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180 MHz	40	5200 MHz	48	5240 MHz	52	5260 MHz
60	5300 MHz	64	5320 MHz	100	5500 MHz	116	5580 MHz
140	5700 MHz	149	5745 MHz	153	5765 MHz	157	5785 MHz
161	5805 MHz	165	5825 MHz	N/A	N/A	N/A	N/A
802.11n(40MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz	54	5270 MHz	62	5310 MHz
102	5510 MHz	110	5550 MHz	134	5670 MHz	151	5755 MHz
159	5795 MHz	N/A	N/A	N/A	N/A	N/A	N/A
802.11ac(20MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
144	5720 MHz	N/A	N/A	N/A	N/A	N/A	N/A
802.11ac(40MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
142	5710 MHz	N/A	N/A	N/A	N/A	N/A	N/A
802.11ac(80MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
42	5210 MHz	155	5775 MHz	N/A	N/A	N/A	N/A

BT/WLAN Added Antenna List

Antenna	Manufacturer	Model No.	Peak Gain
Monopole Antenna(Main)	Luxshare corporation	L01RF031-DT-R	2.51dBi for 2.40~2.50GHz band
Monopole Antenna (Aux)			-0.12dBi for 5.15~5.85GHz band
PIFA Antenna 1#	Luxshare corporation	L01RF014-R	-0.14dBi for 2.40~2.50GHz band
			-1.56dBi for 5.15~5.85GHz band
PIFA Antenna 2#	Luxshare corporation	L01RF013-R	0.14dBi for 2.40~2.50GHz band
			-1.91dBi for 5.15~5.85GHz band
PIFA Antenna 3#	Luxshare corporation	L01RF022-DT-R	-0.04dBi for 2.40~2.50GHz band
			1.48dBi for 5.15~5.85GHz band

Note1: We use the monopole antenna to do all testing for this report.

Note2: Added PIFA Antenna 1#, 2# and 3# needn't test again, because the max peak gain of PIFA antenna show in the original test report is 1.73dBi, and three PIFA antenna peak gain are lower.

BCM94352HMB FCC/IC approved power levels

Test Mode	Test Channel	Final Power Single Chain Powers
802.11b mode 2*2 CDD	1	19
	6	19
	11	19
802.11g mode (legacy)	1	16
	6	19
	11	16
802.11a mode (legacy)	36	14
	40	14
	48	14
	52	19
	60	19
	64	17
	100	16
	116	19
	140	16
	149-165	19
802.11n(20MHz) mode 2*2	1	15
	2-10	19
	11	15.5
	36 MCS 0-7 (CCD)	10.5
	40 MCS 0-7 (CCD)	10.5
	48 MCS 0-7 (CCD)	10.5
	36 MCS 0-7 (STBC)	12.5
	40 MCS 0-7 (STBC)	12.5
	48 MCS 0-7 (STBC)	12.5
	52 MCS 0 (CCD)	16
	60 MCS 0 (CCD)	16
	64 MCS 0 (CCD)	16
	100 MCS 0 (CCD)	17
	116 MCS 0 (CCD)	17.5
	140 MCS 0 (CCD)	16
	144 MCS 0 (CCD)	15.5

	149-165 MCS 0 (CCD)	19

Test Mode	Test Channel	Final Power Single Chain Powers
802.11n(40MHz) (SISO)	3	13.5
	4	14
	6	16.5
	8	15
	9	13.5
	38 MCS0 (CDD)	10.5
	46 MCS0 (CDD)	10.5
	54 MCS0 (CDD)	17.5
	62 MCS0 (CDD)	14
	102 MCS0 (CDD)	12
	110 MCS0 (CDD)	17.5
	134 MCS0 (CDD)	16
	142 MCS0 (CDD)	16
	151 MCS0 (CDD)	16
	159 MCS0 (CDD)	19
802.11n(40MHz) (CCD/SDM)	3	13.5
	4	14
	6	16.5
	8	15
	9	13.5
	38 MCS0 (CDD)	10.5
	46 MCS0 (CDD)	10.5
	38 MCS0 (STBC)	13
	46 MCS0 (STBC)	14
	54 MCS0 (CDD)	17.5
	62 MCS0 (CDD)	14
	102 MCS0 (CDD)	12
	110 MCS0 (CDD)	17.5
	134 MCS0 (CDD)	16
	142 MCS0 (CDD)	16
	151 MCS0 (CDD)	16
	159 MCS0 (CDD)	19
Test Mode	Test Channel	Final Power Single Chain Powers

802.11ac(80MHz) (SISO)	42 MCS0 (CDD)	12
	155 MCS0 (CDD)	16
802.11ac(80MHz) (CCD)	42 MCS0 (CDD)	12
	155 MCS0 (CDD)	16

Note: The power levels shown are the single chain levels. For MIMO modes this will be the power on each chain (not the total summed power).

1.2. Mode of Operation

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: Transmit by 802.11a
Mode 2: Transmit by 802.11n (20MHz)
Mode 3: Transmit by 802.11n (40MHz)
Mode 4: Transmit by 802.11ac
Mode 5: Receive by 802.11n (20MHz)

Note:

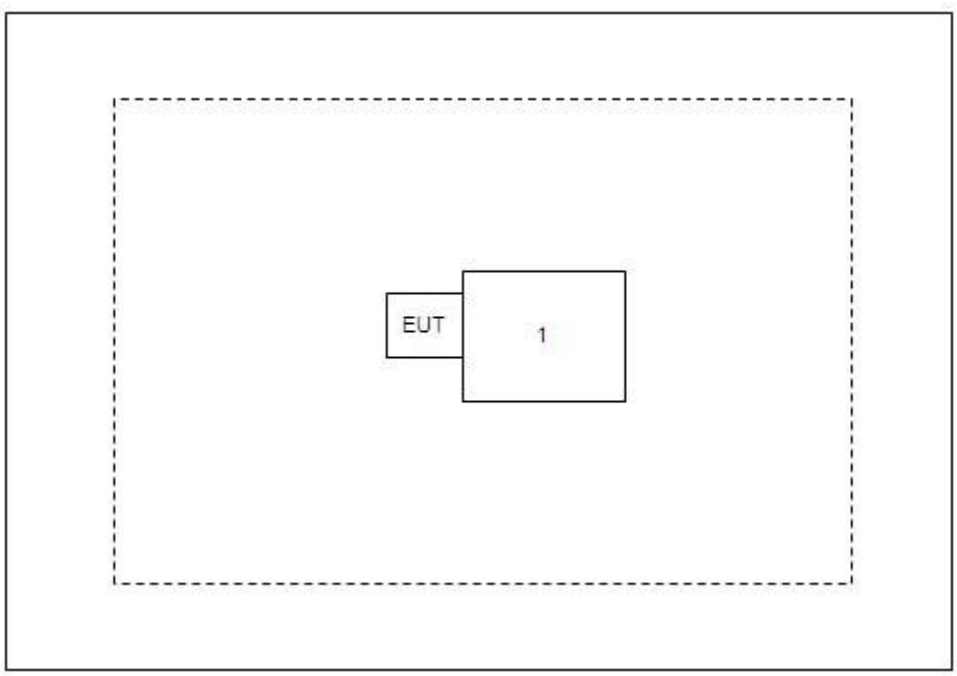
1. Regards to the frequency band operation: the lowest、middle and highest frequency of channel were selected to perform the test, then shown on this report.

1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook	Dell	N80V	8BN0AS226971468	Non-Shielded, 1.8m

1.4. Configuration of Tested System

Connection Diagram


Signal Cable Type		Signal cable Description
A	N/A	N/A

1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on above.
2	Execute the software “Mtool” on the PC provided by applicant.
3	Setup the test channel and the test mode press ok to start the continue transmit.

2. Technical Test

2.1. Summary of Test Result

☒ No deviations from the test standards

☐ Deviations from the test standards as below description:

Performed Test Item	Normative References	Test Performed	Deviation
Radiated Emission	FCC CFR Title 47 Part 15 Subpart C: 2012 Section 15.209 RSS-210 Issue 8 December 2010 Section 2.7 Table 2 and Table 3	Yes	No
Radiated Emission Band Edge	FCC CFR Title 47 Part 15 Subpart C: 2012 Section 15.205, 15.407(b) RSS-210 Issue 8 December 2010 A9.3	Yes	No

2.2. Test Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	21
Humidity (%RH)	25-75	50
Barometric pressure (mbar)	860-1060	950-1000

3. Radiated Emission

3.1. Test Equipment

Radiated Emission / AC-2

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
EMI Test Receiver	R&S	ESCI	100573	2013.04.18
Loop Antenna	R&S	HFH2-Z2	833799/003	2013.11.22
Bilog Antenna	Teseq GmbH	CBL6112D	27611	2013.10.18
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2014.03.01
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC2-TH	2013.05.07

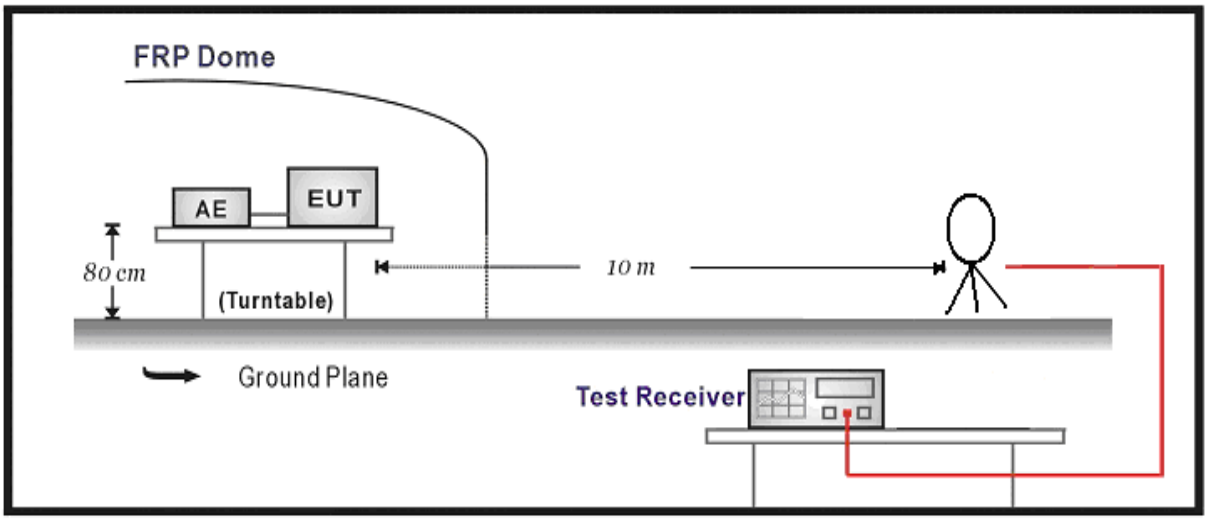
Radiated Emission / AC-5

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	N9020A	MY49100159	2014.03.30
Preamplifier	Miteq	NSP1800-25	1364185	2013.05.04
Preamplifier	QuieTek	AP-040G	CHM-0906001	2013.05.04
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2013.10.15
DRG Horn	ETS-Lindgren	3117	00123988	2014.01.21
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2013.11.24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2014.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2014.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2014.03.01
EMI Receiver	Agilent	N9038A	MY51210196	2013.06.11
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2014.01.11

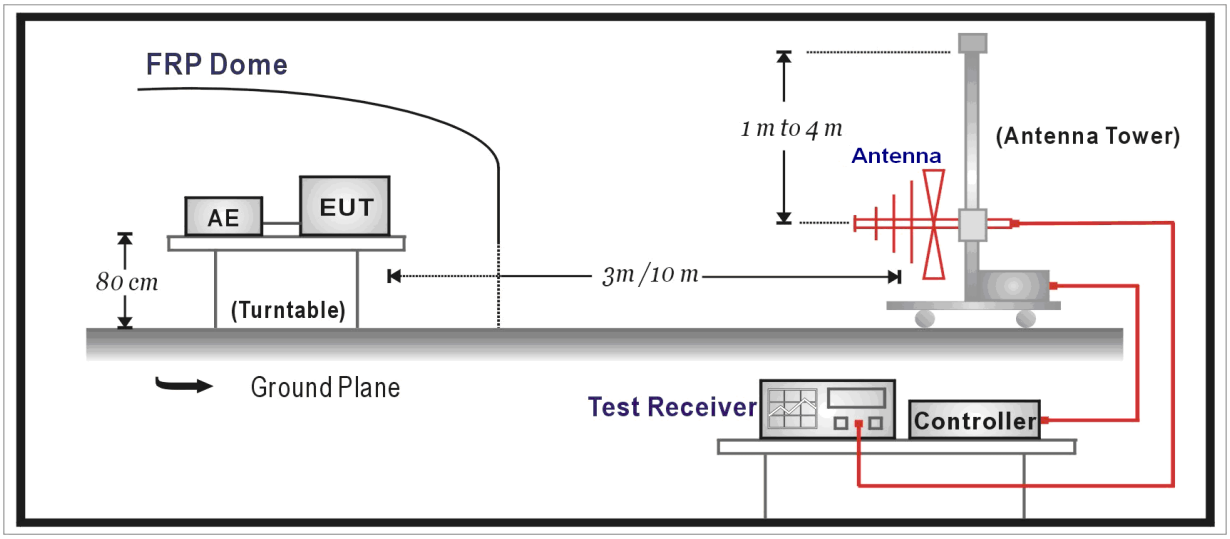
Note 1: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

3.2. Test Setup

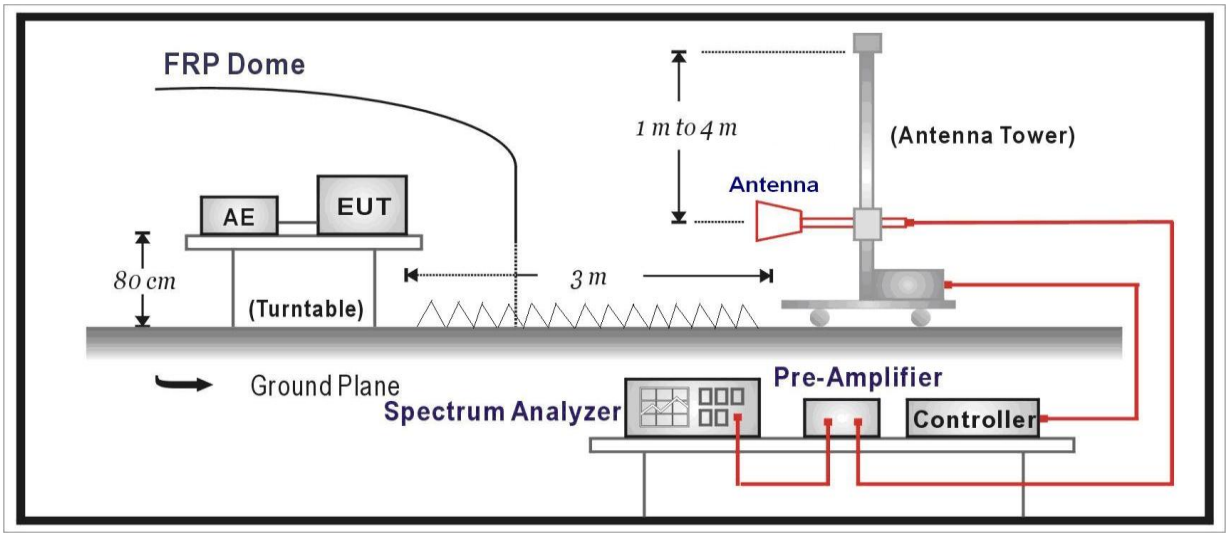
Below 30MHz Test Setup:



Below 1GHz Test Setup:



Above 1GHz Test Setup:



3.3. Limit

FCC Part 15 Subpart C Paragraph 15.209		
Frequency (MHz)	Distance (m)	Level (dBuV/m)
30 - 88	3	40
88 - 216	3	43.5
216 - 960	3	46
Above 960	3	54

Note 1: The lower limit shall apply at the transition frequency.

Note 2: Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

Note 3: E field strength (dBuV/m) = 20 log E field strength (uV/m)

3.4. Test Procedure

The EUT was setup according to ANSI C63.4: 2009 and tested according to KDB 789033. The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the

maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2009 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

The frequency range from 30MHz to 10th harmonic is checked.

Note: When doing emission measurement above 1GHz, the horn antenna will be bended down a little (as horn antenna has the narrow beamwidth) in order to keeping the antenna in the “cone of radiation” of EUT. The 3dB beamwidth is 60~10 degrees for H-plane and 90~10 degrees for E-plane.

3.5. Uncertainty

The measurement uncertainty above 1G is defined as ± 3.9 dB

below 1G is defined as ± 3.8 dB

3.6. Test Result

All of the test result shown indicates the worst case, and spectrum analyzer parameters setting as shown below:
Peak detector: RBW = 1MHz, VBW = 3MHz, sweep time = 200ms;
Average detector: RBW = 1MHz, VBW = 10Hz, sweep time = auto.

Mode1: Transmit by 802.11a

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Chain 1	36	H	10360.0	38.4	4.1	42.5	54(Note3)	-11.5	PK
		V	10360.0	37.6	4.1	41.6	54(Note3)	-12.4	PK
		H	13053.0	36.4	8.2	44.5	54(Note3)	-9.5	PK
		V	13095.5	37.3	8.2	45.5	54(Note3)	-8.5	PK
		H	15540.0	38.0	7.5	45.5	54(Note3)	-8.5	PK
		V	15540.0	37.5	7.2	44.7	54(Note3)	-9.3	PK
	40	H	10400.0	37.2	4.1	41.3	54(Note3)	-12.7	PK
		V	10400.0	37.4	4.1	41.4	54(Note3)	-12.6	PK
		H	13180.5	36.7	8.2	44.9	54(Note3)	-9.1	PK
		V	12934.0	36.0	8.1	44.2	54(Note3)	-9.8	PK
		H	15600.0	36.1	7.6	43.7	54(Note3)	-10.3	PK
		V	15600.0	37.1	7.4	44.6	54(Note3)	-9.4	PK
	48	H	10480.0	36.8	4.2	41.0	54(Note3)	-13.0	PK
		V	10480.0	36.9	4.2	41.1	54(Note3)	-12.9	PK
		H	13104.0	36.3	8.2	44.5	54(Note3)	-9.5	PK
		V	13010.5	36.4	8.0	44.4	54(Note3)	-9.6	PK
		H	15720.0	36.4	7.4	43.8	54(Note3)	-10.2	PK
		V	15720.0	35.4	7.4	42.7	54(Note3)	-11.3	PK
	52	H	10520.0	37.8	4.2	42.1	54(Note3)	-11.9	PK
		V	10520.0	37.2	4.2	41.5	54(Note3)	-12.5	PK
		H	12730.0	36.8	8.7	45.4	54(Note3)	-8.6	PK
		V	13155.0	36.4	8.2	44.6	54(Note3)	-9.4	PK
		H	15780.0	36.8	7.4	44.2	54(Note3)	-9.8	PK
		V	15780.0	37.0	7.5	44.5	54(Note3)	-9.5	PK
	60	H	10600.0	36.7	4.4	41.2	54(Note3)	-12.9	PK
		V	10600.0	37.6	4.4	42.0	54(Note3)	-12.0	PK
		H	13002.0	37.5	8.0	45.5	54(Note3)	-8.5	PK

		V	13010.5	37.1	8.0	45.2	54(Note3)	-8.8	PK
		H	15900.0	39.7	7.7	47.4	54(Note3)	-6.6	PK
		V	15900.0	38.0	7.9	45.9	54(Note3)	-8.1	PK
	64	H	10640.0	36.0	4.6	40.6	54(Note3)	-13.4	PK
		V	10640.0	37.1	4.6	41.7	54(Note3)	-12.3	PK
		H	13070.0	36.9	8.2	45.0	54(Note3)	-9.0	PK
		V	13053.0	35.4	8.1	43.5	54(Note3)	-10.5	PK
		H	15960.0	37.8	7.9	45.7	54(Note3)	-8.3	PK
		V	15960.0	35.4	8.2	43.6	54(Note3)	-10.4	PK
	100	H	11000.0	35.4	5.0	40.4	54(Note3)	-13.6	PK
		V	11000.0	35.9	5.0	40.9	54(Note3)	-13.1	PK
		H	12976.5	36.2	8.1	44.3	54(Note3)	-9.7	PK
		V	13061.5	37.2	8.1	45.3	54(Note3)	-8.7	PK
		H	16500.0	36.5	9.3	45.8	54(Note3)	-8.2	PK
		V	16500.0	37.0	9.4	46.4	54(Note3)	-7.6	PK
	116	H	11160.0	36.4	5.5	42.0	54(Note3)	-12.0	PK
		V	11160.0	37.1	5.5	42.6	54(Note3)	-11.4	PK
		H	12959.5	37.3	8.2	45.5	54(Note3)	-8.5	PK
		V	13240.0	35.1	8.1	43.2	54(Note3)	-10.8	PK
		H	16740.0	36.1	10.6	46.7	54(Note3)	-7.3	PK
		V	16740.0	35.1	10.7	45.8	54(Note3)	-8.2	PK
	140	H	11400.0	35.5	6.2	41.7	54(Note3)	-12.3	PK
		V	11400.0	35.8	6.1	42.0	54(Note3)	-12.0	PK
		H	12764.0	36.4	8.7	45.1	54(Note3)	-8.9	PK
		V	12764.0	36.7	8.6	45.3	54(Note3)	-8.7	PK
		H	17100.0	35.8	11.0	46.7	54(Note3)	-7.3	PK
		V	17100.0	35.3	10.8	46.1	54(Note3)	-7.9	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode2: Transmit by 802.11n(20MHz)

Chain	CH	Antenna	Frequency (MHz)	Reading Level	Factor	Measure Level	Limit (dBuV/m)	Margin (dB)	Detector
				(dBuV/m)	(dB)	(dBuV/m)			

Chain 1+2	36	H	10360.0	38.6	4.1	42.7	54(Note3)	-11.3	PK
		V	10360.0	38.4	4.1	42.5	54(Note3)	-11.5	PK
		H	13036.0	36.7	8.1	44.8	54(Note3)	-9.2	PK
		V	13053.0	35.8	8.1	43.9	54(Note3)	-10.1	PK
		H	15540.0	37.7	7.5	45.2	54(Note3)	-8.8	PK
		V	15540.0	36.8	7.2	44.1	54(Note3)	-9.9	PK
	40	H	10400.0	38.7	4.1	42.8	54(Note3)	-11.2	PK
		V	10400.0	37.6	4.1	41.7	54(Note3)	-12.3	PK
		H	13036.0	36.9	8.1	45.0	54(Note3)	-9.0	PK
		V	12891.5	36.2	8.2	44.4	54(Note3)	-9.6	PK
		H	15600.0	35.6	7.6	43.2	54(Note3)	-10.8	PK
		V	15600.0	37.2	7.4	44.7	54(Note3)	-9.3	PK
	48	H	10480.0	36.2	4.2	40.3	54(Note3)	-13.7	PK
		V	10480.0	36.1	4.2	40.2	54(Note3)	-13.8	PK
		H	13189.0	35.9	8.3	44.1	54(Note3)	-9.9	PK
		V	13197.5	36.3	8.2	44.5	54(Note3)	-9.5	PK
		H	15720.0	37.0	7.4	44.4	54(Note3)	-9.6	PK
		V	15720.0	36.9	7.4	44.3	54(Note3)	-9.7	PK
	52	H	10520.0	37.8	4.2	42.1	54(Note3)	-11.9	PK
		V	10520.0	36.4	4.2	40.7	54(Note3)	-13.3	PK
		H	12985.0	35.9	8.1	43.9	54(Note3)	-10.1	PK
		V	13189.0	37.3	8.2	45.5	54(Note3)	-8.5	PK
		H	15780.0	37.4	7.4	44.9	54(Note3)	-9.1	PK
		V	15780.0	37.5	7.5	44.9	54(Note3)	-9.1	PK
	60	H	10600.0	37.1	4.4	41.6	54(Note3)	-12.4	PK
		V	10600.0	37.8	4.4	42.3	54(Note3)	-11.7	PK
		H	12798.0	34.2	8.5	42.7	54(Note3)	-11.3	PK
		V	13104.0	36.6	8.2	44.7	54(Note3)	-9.3	PK
		H	15900.0	38.9	7.7	46.6	54(Note3)	-7.4	PK
		V	15900.0	36.7	7.9	44.5	54(Note3)	-9.5	PK
	64	H	10640.0	36.7	4.6	41.3	54(Note3)	-12.7	PK
		V	10640.0	37.3	4.6	41.9	54(Note3)	-12.1	PK
		H	13070.0	37.3	8.2	45.5	54(Note3)	-8.5	PK
		V	13095.5	36.5	8.2	44.7	54(Note3)	-9.3	PK
		H	15960.0	36.7	7.9	44.6	54(Note3)	-9.4	PK
		V	15960.0	36.3	8.2	44.5	54(Note3)	-9.5	PK
	100	H	11000.0	35.9	5.0	40.9	54(Note3)	-13.1	PK

		V	11000.0	35.4	5.0	40.4	54(Note3)	-13.6	PK
		H	13180.5	35.4	8.2	43.7	54(Note3)	-10.3	PK
		V	13155.0	37.7	8.2	45.9	54(Note3)	-8.1	PK
		H	16500.0	36.3	9.3	45.6	54(Note3)	-8.4	PK
		V	16500.0	36.6	9.4	46.0	54(Note3)	-8.0	PK
	116	H	11160.0	35.7	5.5	41.3	54(Note3)	-12.7	PK
		V	11160.0	36.3	5.5	41.7	54(Note3)	-12.3	PK
		H	13019.0	36.3	8.1	44.4	54(Note3)	-9.6	PK
		V	13138.0	36.1	8.2	44.2	54(Note3)	-9.8	PK
		H	16740.0	35.6	10.6	46.1	54(Note3)	-7.9	PK
		V	16740.0	35.8	10.7	46.5	54(Note3)	-7.5	PK
	140	H	11400.0	36.1	6.2	42.3	54(Note3)	-11.7	PK
		V	11400.0	36.0	6.1	42.1	54(Note3)	-11.9	PK
		H	13036.0	36.6	8.1	44.7	54(Note3)	-9.3	PK
		V	13095.5	36.0	8.2	44.2	54(Note3)	-9.8	PK
		H	17100.0	36.3	11.0	47.2	54(Note3)	-6.8	PK
		V	17100.0	35.0	10.8	45.8	54(Note3)	-8.2	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode3: Transmit by 802.11n(40MHz)

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Chain 1+2	38	H	10380.0	37.3	4.1	41.4	54(Note3)	-12.6	PK
		V	10380.0	37.3	4.1	41.3	54(Note3)	-12.7	PK
		H	13189.0	37.6	8.3	45.9	54(Note3)	-8.1	PK
		V	12883.0	35.4	8.1	43.5	54(Note3)	-10.5	PK
		H	15570.0	38.3	7.6	45.9	54(Note3)	-8.1	PK
		V	15570.0	37.5	7.4	44.9	54(Note3)	-9.1	PK
	46	H	10460.0	36.0	4.1	40.1	54(Note3)	-13.9	PK
		V	10460.0	36.0	4.1	40.1	54(Note3)	-13.9	PK
		H	13240.0	37.3	8.2	45.5	54(Note3)	-8.5	PK
		V	13053.0	36.7	8.1	44.8	54(Note3)	-9.2	PK

		H	15690.0	37.0	7.4	44.4	54(Note3)	-9.6	PK
		V	15690.0	36.9	7.4	44.3	54(Note3)	-9.7	PK
	54	H	10540.0	37.1	4.3	41.4	54(Note3)	-12.6	PK
		V	10540.0	37.3	4.3	41.6	54(Note3)	-12.4	PK
		H	12764.0	37.2	8.7	45.8	54(Note3)	-8.2	PK
		V	13061.5	37.1	8.1	45.2	54(Note3)	-8.8	PK
		H	15810.0	36.6	7.5	44.1	54(Note3)	-9.9	PK
		V	15810.0	36.9	7.5	44.5	54(Note3)	-9.5	PK
	62	H	10620.0	36.4	4.5	41.0	54(Note3)	-13.0	PK
		V	10620.0	37.4	4.5	41.9	54(Note3)	-12.1	PK
		H	13002.0	36.4	8.0	44.5	54(Note3)	-9.5	PK
		V	13019.0	36.4	8.0	44.5	54(Note3)	-9.5	PK
		H	15930.0	37.1	7.8	44.9	54(Note3)	-9.1	PK
		V	15930.0	38.4	8.0	46.4	54(Note3)	-7.6	PK
	102	H	11020.0	36.4	5.0	41.4	54(Note3)	-12.6	PK
		V	11020.0	36.5	5.0	41.5	54(Note3)	-12.5	PK
		H	13146.5	36.1	8.2	44.4	54(Note3)	-9.6	PK
		V	13061.5	36.0	8.1	44.1	54(Note3)	-9.9	PK
		H	16530.0	37.3	9.4	46.7	54(Note3)	-7.3	PK
		V	16530.0	36.9	9.5	46.4	54(Note3)	-7.6	PK
	110	H	11100.0	35.5	5.4	40.9	54(Note3)	-13.1	PK
		V	11100.0	35.3	5.3	40.6	54(Note3)	-13.4	PK
		H	13180.5	38.2	8.2	46.4	54(Note3)	-7.6	PK
		V	13053.0	37.3	8.1	45.4	54(Note3)	-8.6	PK
		H	16650.0	35.1	10.1	45.2	54(Note3)	-8.8	PK
		V	16650.0	36.3	10.2	46.5	54(Note3)	-7.5	PK
	134	H	11340.0	34.7	6.0	40.7	54(Note3)	-13.3	PK
		V	11340.0	35.7	5.9	41.6	54(Note3)	-12.4	PK
		H	12917.0	34.6	8.3	42.9	54(Note3)	-11.1	PK
		V	12985.0	36.1	8.1	44.2	54(Note3)	-9.8	PK
		H	17010.0	35.7	10.6	46.3	54(Note3)	-7.7	PK
		V	17010.0	36.0	10.3	46.3	54(Note3)	-7.7	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode4: Transmit by 802.11ac

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Chain 1+2	42	H	10420.0	38.4	4.1	42.5	54(Note3)	-11.5	PK
		V	10420.0	38.7	4.1	42.8	54(Note3)	-11.2	PK
		H	13078.5	36.0	8.2	44.1	54(Note3)	-9.9	PK
		V	12993.5	36.8	8.1	44.8	54(Note3)	-9.2	PK
		H	15630.0	36.2	7.5	43.6	54(Note3)	-10.4	PK
		V	15630.0	35.3	7.3	42.7	54(Note3)	-11.3	PK
	142	H	11420.0	-6.0	47.9	41.9	54(Note3)	-12.1	PK
		V	11420.0	-4.9	47.8	42.9	54(Note3)	-11.1	PK
		H	13000.0	-7.5	50.5	42.9	54(Note3)	-11.1	PK
		V	13000.0	-7.8	50.5	42.7	54(Note3)	-11.3	PK
		H	17130.0	-9.7	54.6	45.0	54(Note3)	-9.0	PK
		V	17130.0	-8.4	54.6	46.1	54(Note3)	-7.9	PK
	144	H	11440.0	-4.9	48.0	43.1	54(Note3)	-10.9	PK
		V	11440.0	-4.6	47.9	43.3	54(Note3)	-10.7	PK
		H	13000.0	-7.0	50.5	43.5	54(Note3)	-10.5	PK
		V	13000.0	-8.5	50.5	42.0	54(Note3)	-12.0	PK
		H	17160.0	-8.6	54.6	46.0	54(Note3)	-8.0	PK
		V	17160.0	-8.6	54.5	46.0	54(Note3)	-8.0	PK

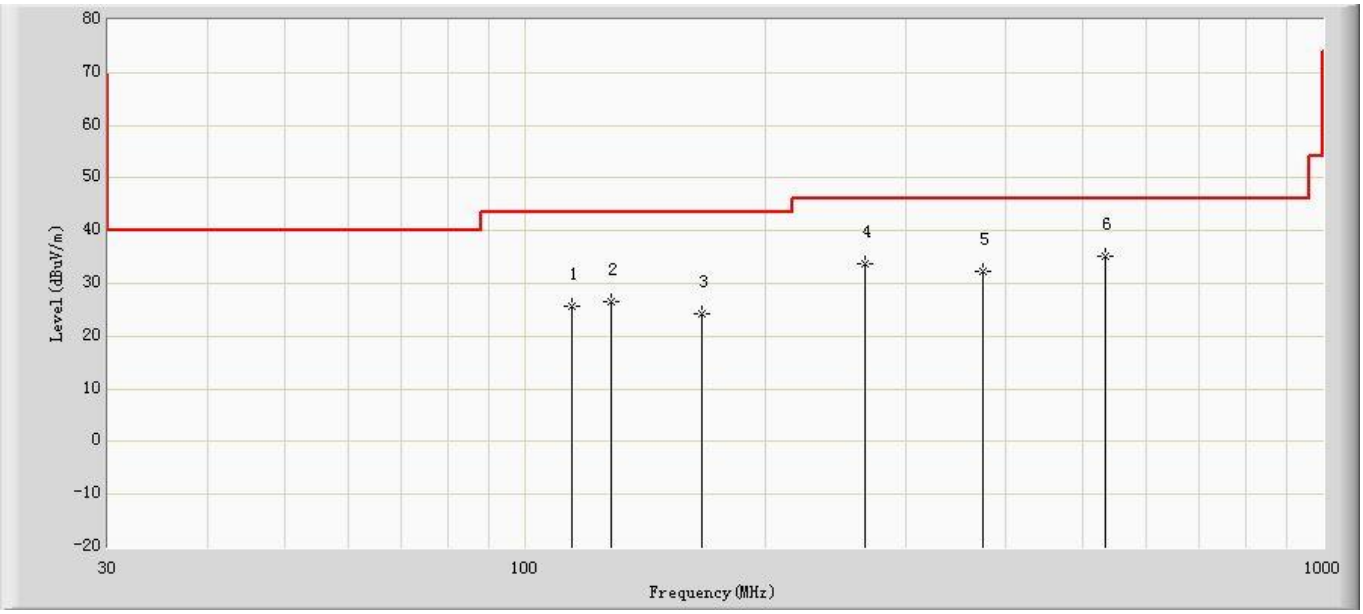
Note: 1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

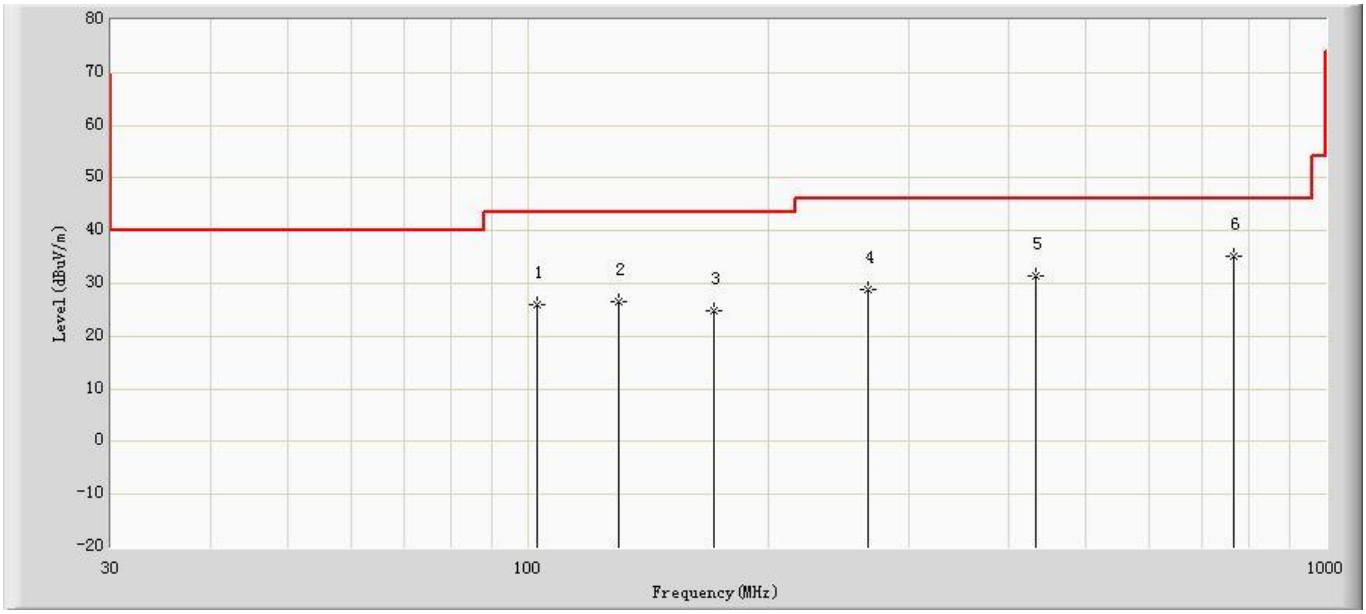
The worst case of the Radiated Emission below 1GHz:

Engineer: Milo	
Site: AC2	Time: 2013/03/26 - 18:19
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: CBL6112D_27611(30-1000MHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 5320MHz by 802.11a	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		114.511	25.774	7.287	-17.726	43.500	18.487	QP
2		128.334	26.600	8.059	-16.900	43.500	18.541	QP
3		166.285	24.377	8.068	-19.123	43.500	16.309	QP
4		266.437	33.750	13.805	-12.250	46.000	19.945	QP
5		374.350	32.381	9.719	-13.619	46.000	22.662	QP
6	*	532.703	35.156	9.248	-10.844	46.000	25.908	QP

Engineer: Milo	
Site: AC2	Time: 2013/03/26 - 18:19
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: CBL6112D_27611(30-1000MHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 5320MHz by 802.11a	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		102.750	25.987	8.297	-17.513	43.500	17.690	QP
2		129.789	26.444	7.939	-17.056	43.500	18.505	QP
3		170.771	24.900	8.746	-18.600	43.500	16.153	QP
4		266.316	28.770	8.821	-17.230	46.000	19.948	QP
5		432.307	31.299	7.098	-14.701	46.000	24.201	QP
6	*	765.866	35.176	6.780	-10.824	46.000	28.396	QP

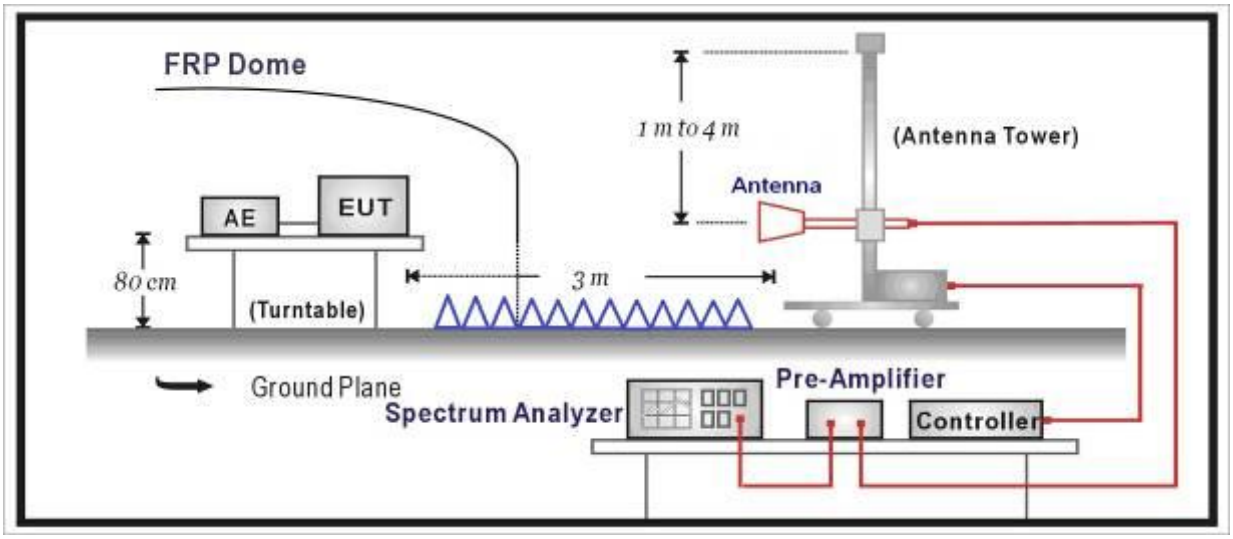
4. Radiated Emission Band Edge

4.1. Test Equipment

☒Radiated Emission Band Edge / AC-5

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	N9020A	MY49100159	2014.03.30
Preamplifier	Miteq	NSP1800-25	1364185	2013.05.04
Preamplifier	QuieTek	AP-040G	CHM-0906001	2013.05.04
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2013.10.15
DRG Horn	ETS-Lindgren	3117	00123988	2014.01.21
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2013.11.24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2014.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2014.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2014.03.01
EMI Receiver	Agilent	N9038A	MY51210196	2013.06.11
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2014.01.11

4.2. Test Setup



4.3. Limit

For 15.205 requirement:

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a).

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])

For 15.407(b) requirement:

- For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.
- For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27dBm/MHz in the 5.15-5.25 GHz band.
- For transmitters operating in the 5.47-5.725 GHz band: all emission outside of the 5.47-5725 GHz band shall not exceed an EIRP of -27 dBm/MHz.
- For transmitters operating in the 5.725-5.825 GHz band: all emission within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27 dBm/MHz.

Operating Frequency Band (MHz)	EIRP Limit (dBm/MHz)	Equivalent Field Strength at 3m (dBuV/m)
5150 - 5250	-27	68.3
5250 - 5350	-27	68.3
5470 - 5725	-27	68.3
5725 - 5825	-27 [Note(1)]	68.3
	-17 [Note(2)]	78.3
Note(1): Outsitde the frequency range 5715 - 5835MHz. Note(2): Within the frequency range from the band edge to 10MHz below or above the band edge, 5715 – 5725MHz and 5825 - 5835MHz.		

4.4. Test Procedure

The EUT was tested according to KDB 789033 for compliance to FCC 47CFR 15.407 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2009 on radiated measurement.

Note: When doing emission measurement above 1GHz, the horn antenna will be bended down a little (as horn antenna has the narrow beamwidth) in order to keeping the antenna in the “cone of radiation” of EUT. The 3dB beamwidth is 10~60 degrees for H-plane and 10~90 degrees for E-plane.

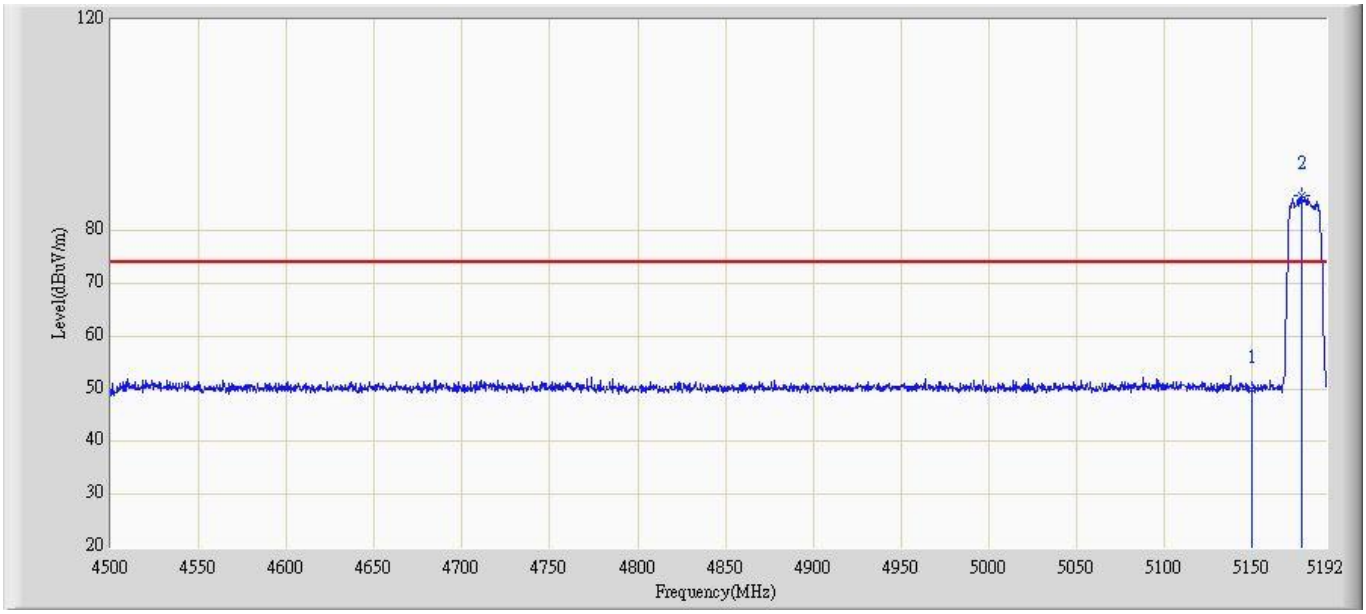
4.5. Uncertainty

The measurement uncertainty above 1GHz is defined as ± 3.9 dB

4.6. Test Result

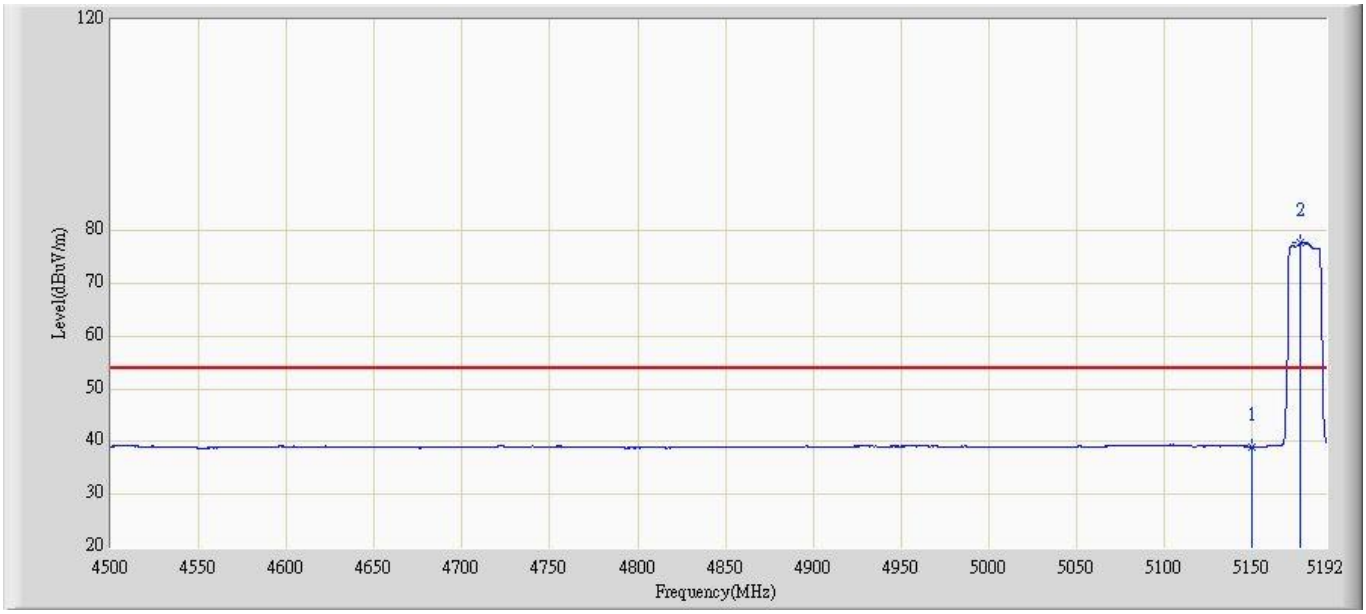
Peak detector: RBW = 1MHz, VBW = 3MHz, sweep time = 200ms;
Average detector: RBW = 1MHz, VBW = 10Hz, sweep time = auto.

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 17:28
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit by 802.11a at 5180MHz Ant 0	



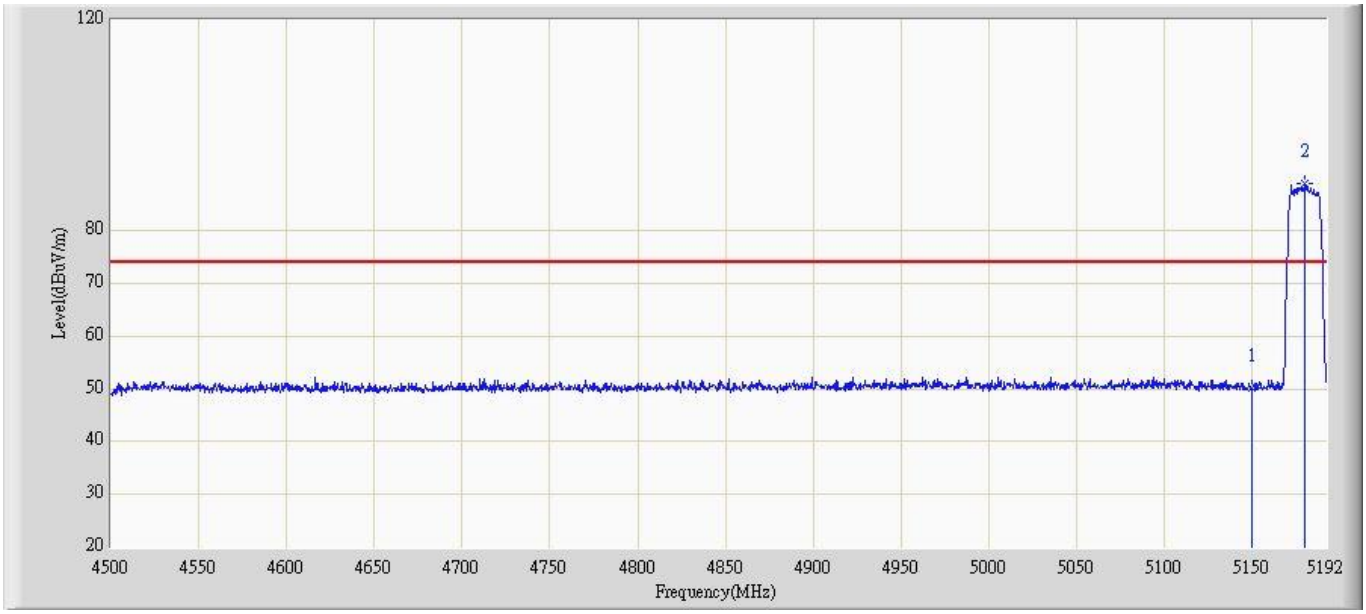
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150.000	49.756	9.735	-24.244	74.000	40.021	PK
2	*	5177.814	86.658	46.576	N/A	N/A	40.082	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 17:32
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit by 802.11a at 5180MHz Ant 0	



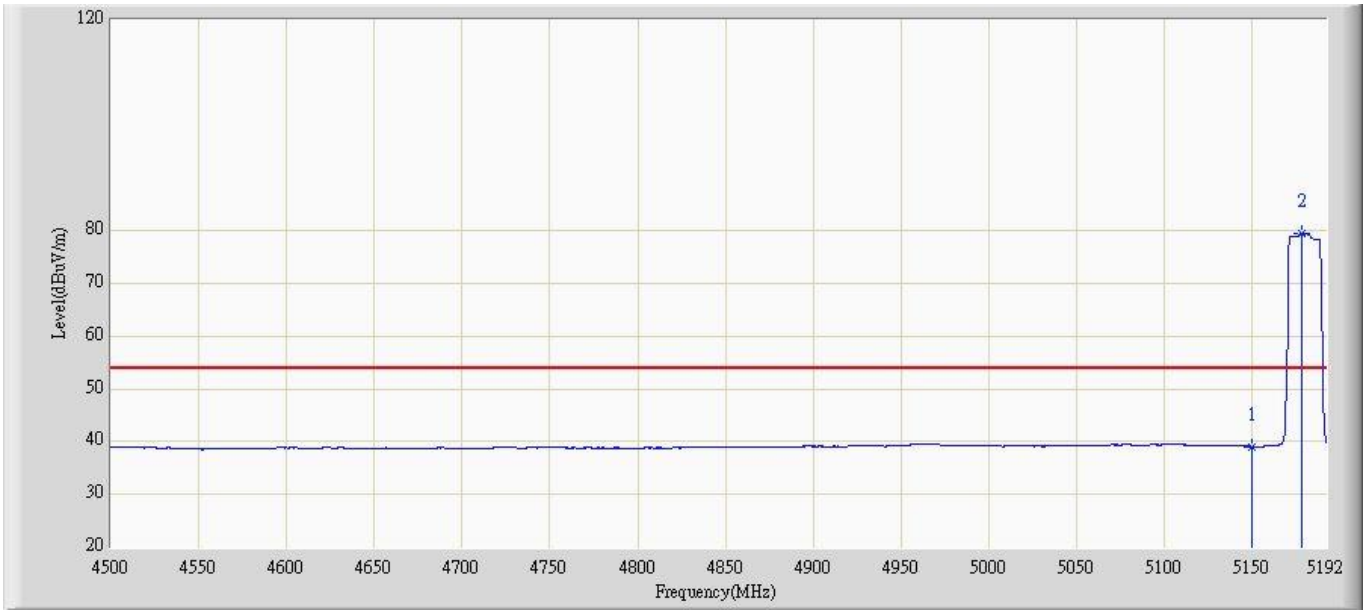
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150.000	39.012	-1.009	-14.988	54.000	40.021	AV
2	*	5177.468	77.652	37.571	N/A	N/A	40.081	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 17:37
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit by 802.11a at 5180MHz Ant 0	



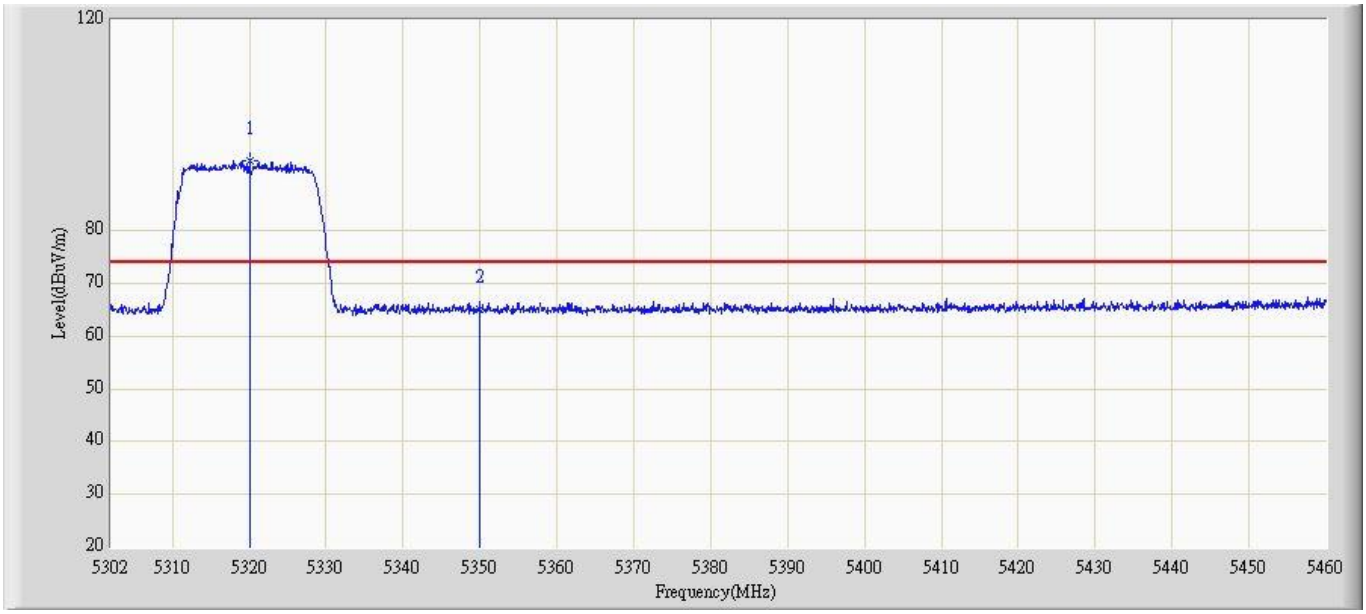
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150.000	50.048	10.067	-23.952	74.000	39.981	PK
2	*	5179.890	89.032	49.033	N/A	N/A	39.999	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 17:39
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1 : Transmit by 802.11a at 5180MHz Ant 0	



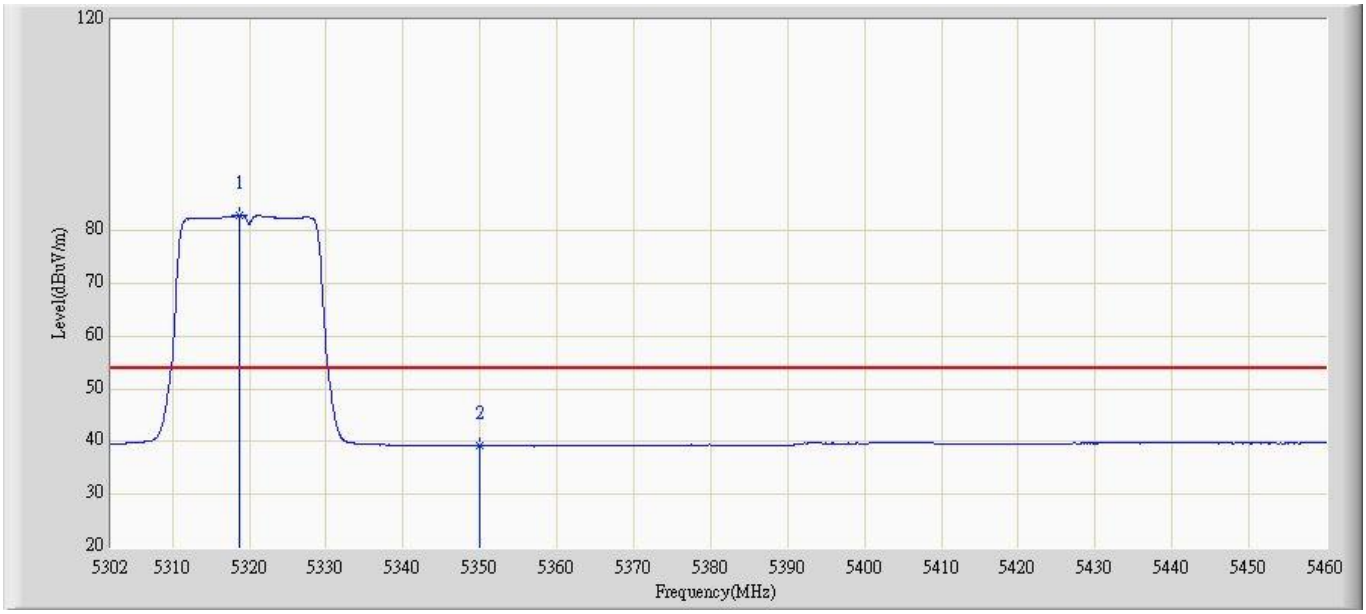
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150.000	39.041	-0.940	-14.959	54.000	39.981	AV
2	*	5177.814	79.491	39.493	N/A	N/A	39.998	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 17:43
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1 : Transmit by 802.11a at 5320MHz Ant 0	



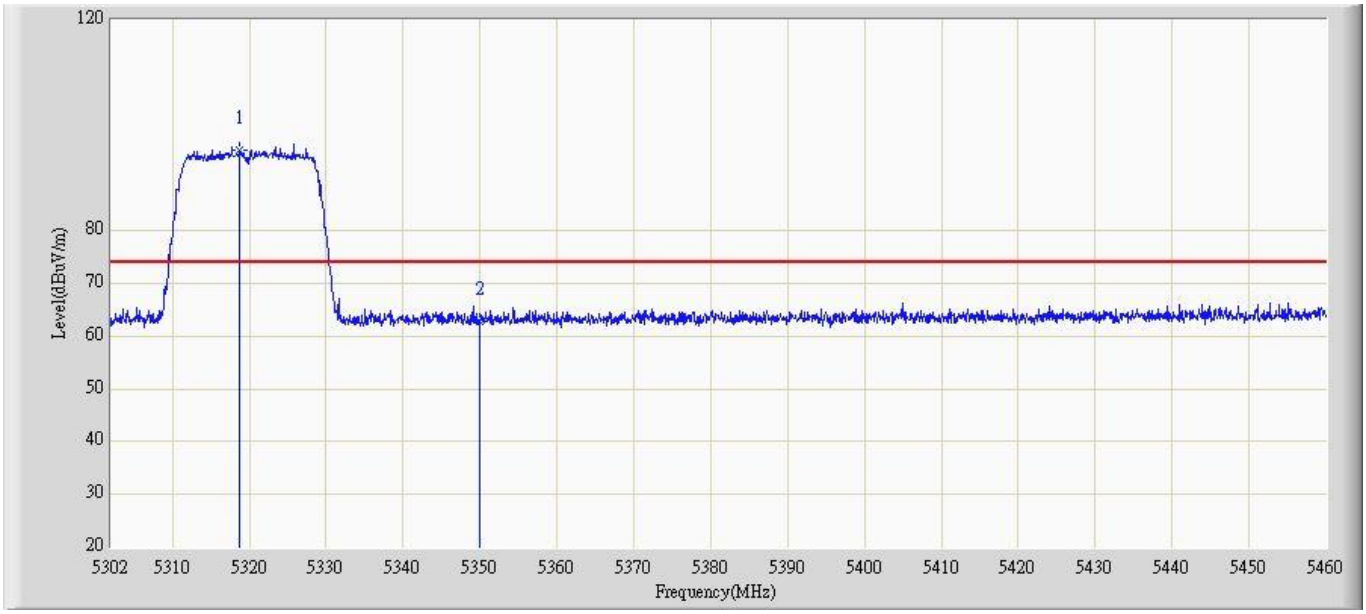
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	5320.091	93.261	52.943	N/A	N/A	40.318	PK
2		5350.000	65.217	24.878	-8.783	74.000	40.339	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 17:47
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit by 802.11a at 5320MHz Ant 0	



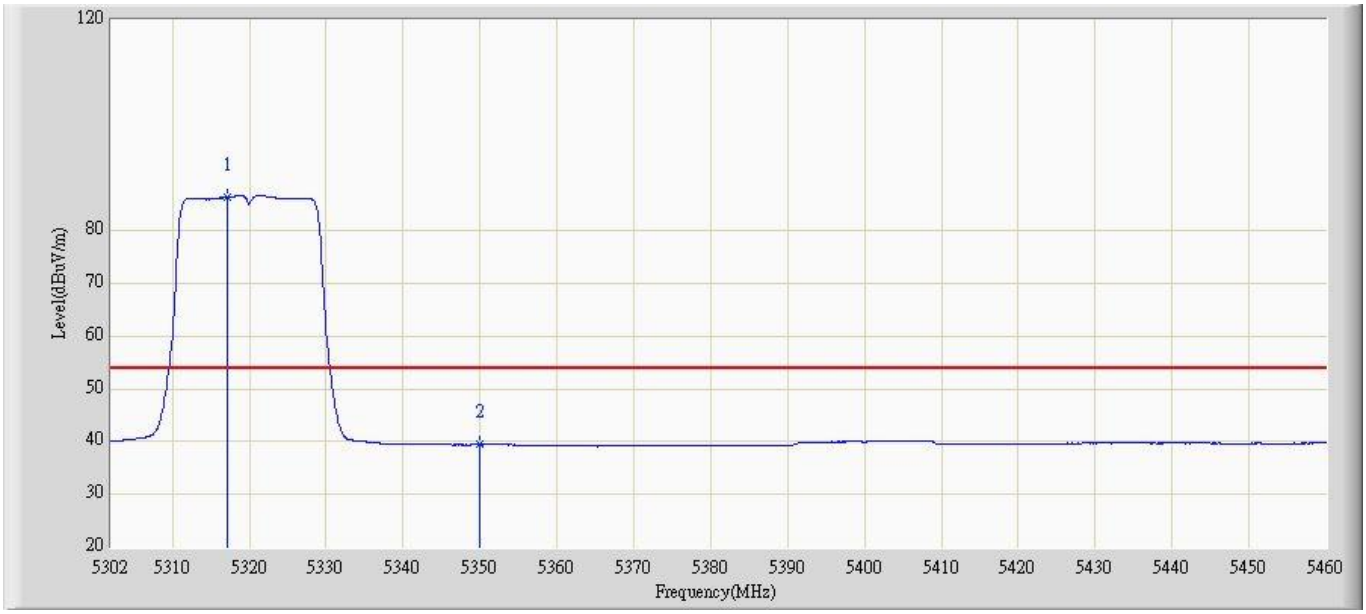
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	5318.748	82.888	42.571	N/A	N/A	40.317	AV
2		5350.000	39.326	-1.013	-14.674	54.000	40.339	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 17:49
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1 : Transmit by 802.11a at 5320MHz Ant 0	



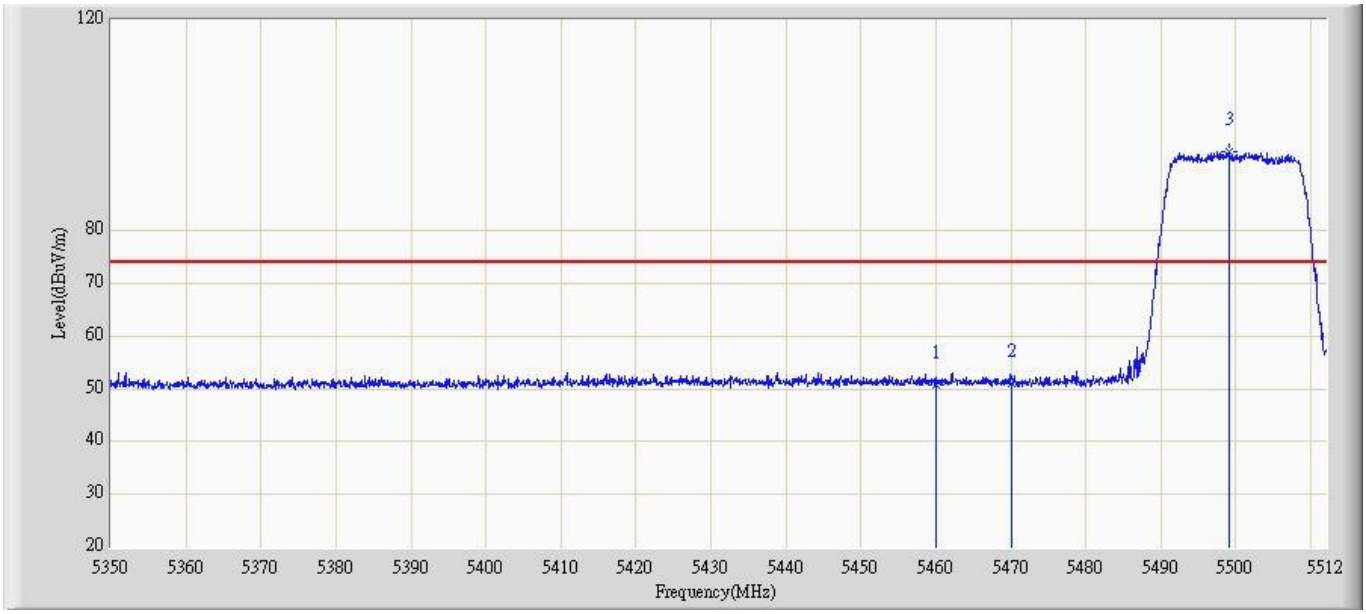
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	5318.748	95.357	55.212	N/A	N/A	40.145	PK
2		5350.000	62.959	22.780	-11.041	74.000	40.179	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 17:50
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1 : Transmit by 802.11a at 5320MHz Ant 0	



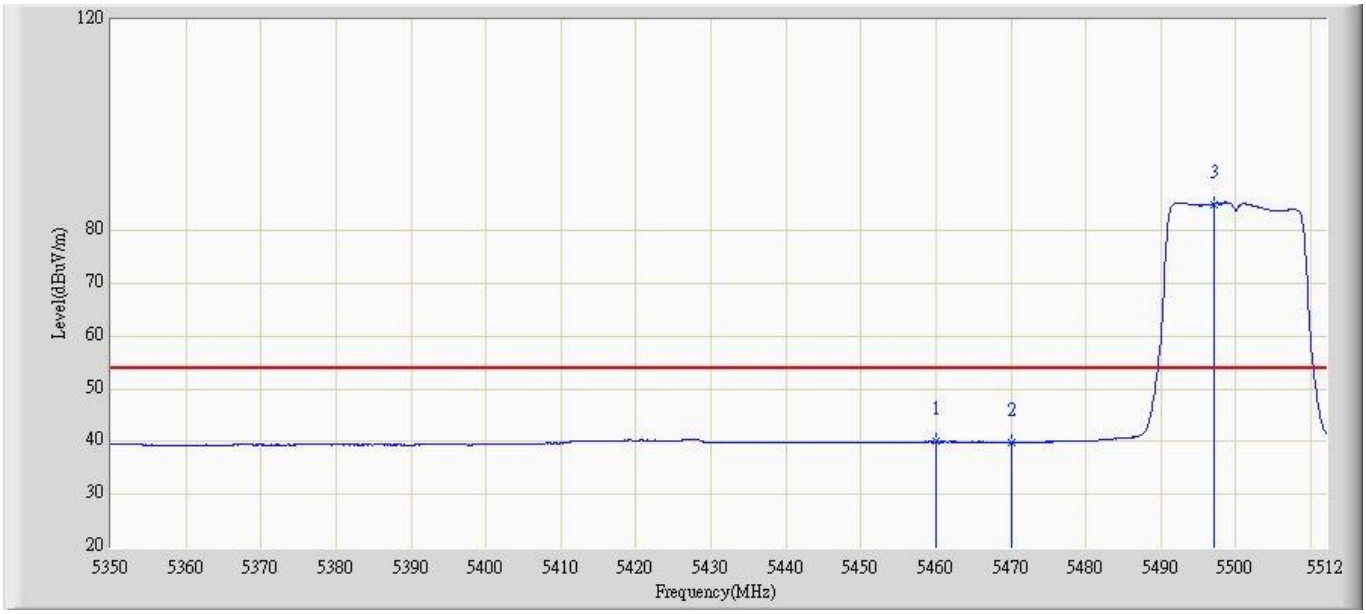
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	5317.168	86.365	46.222	N/A	N/A	40.143	AV
2		5350.000	39.419	-0.760	-14.581	54.000	40.179	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 20:10
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit by 802.11a at 5500MHz Ant 0	



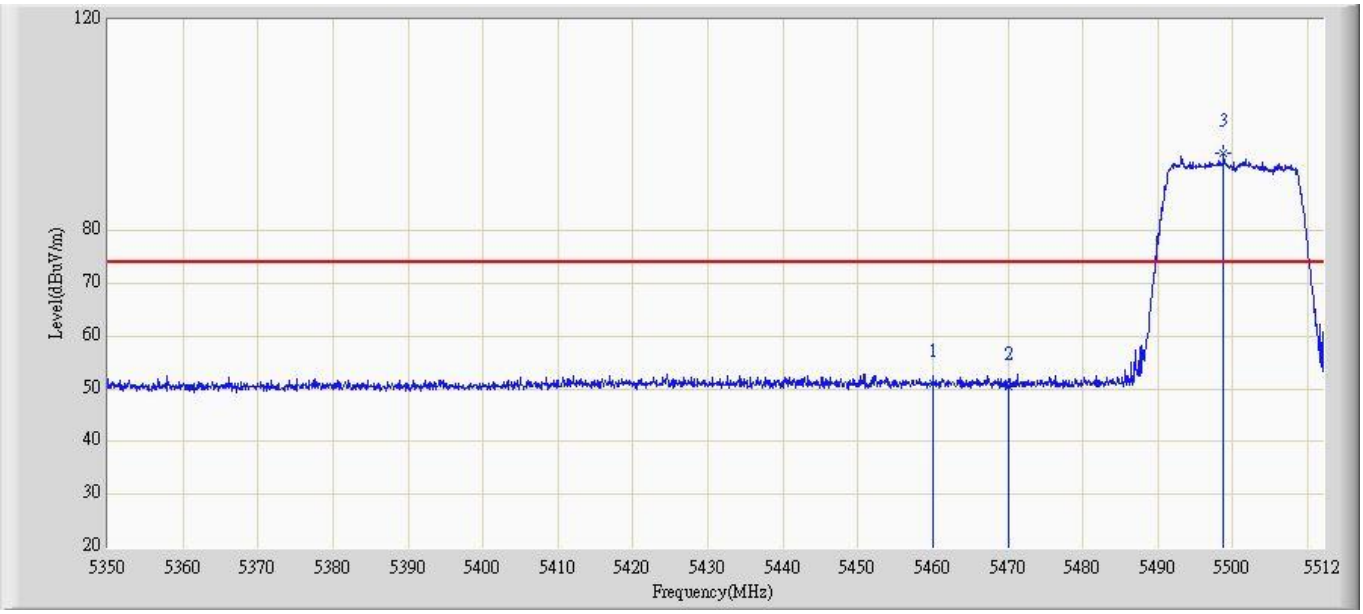
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5460.000	50.878	10.380	-23.122	74.000	40.498	PK
2		5470.000	50.957	10.450	-37.343	88.300	40.507	PK
3	*	5499.202	95.033	54.495	N/A	N/A	40.538	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 20:18
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit by 802.11a at 5500MHz Ant 0	



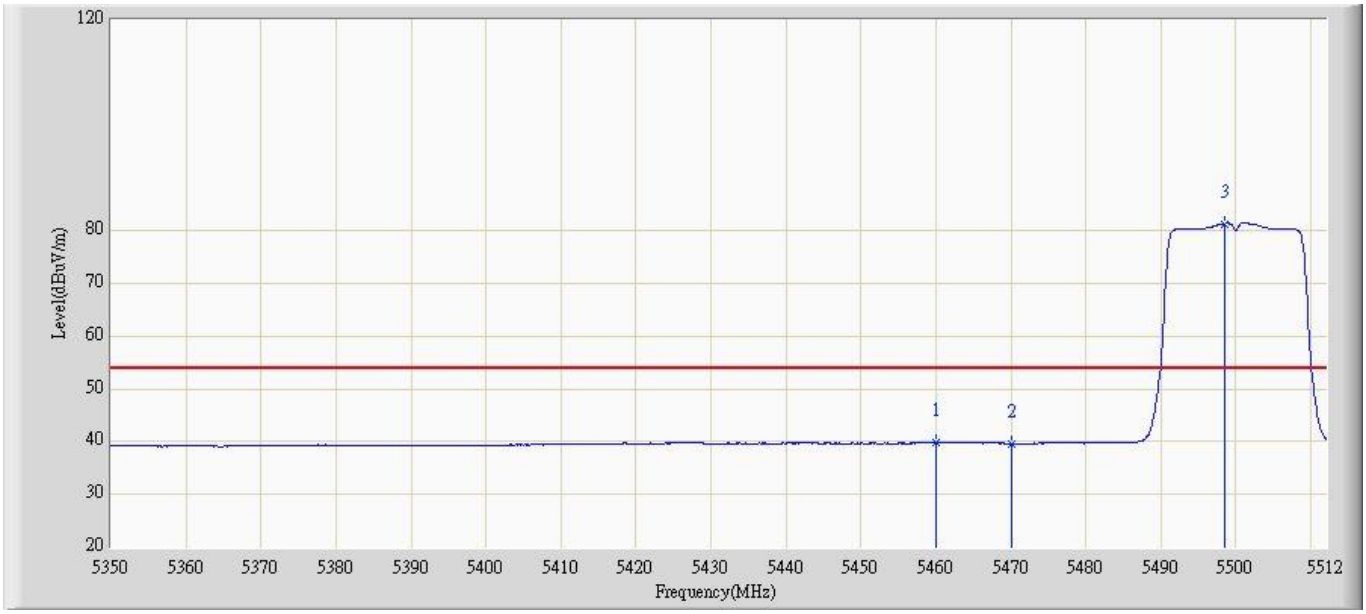
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5460.000	39.973	-0.525	-14.027	54.000	40.498	AV
2		5470.000	39.856	-0.651	-28.444	68.300	40.507	AV
3	*	5497.015	85.085	44.550	N/A	N/A	40.535	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 20:20
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit by 802.11a at 5500MHz Ant 0	



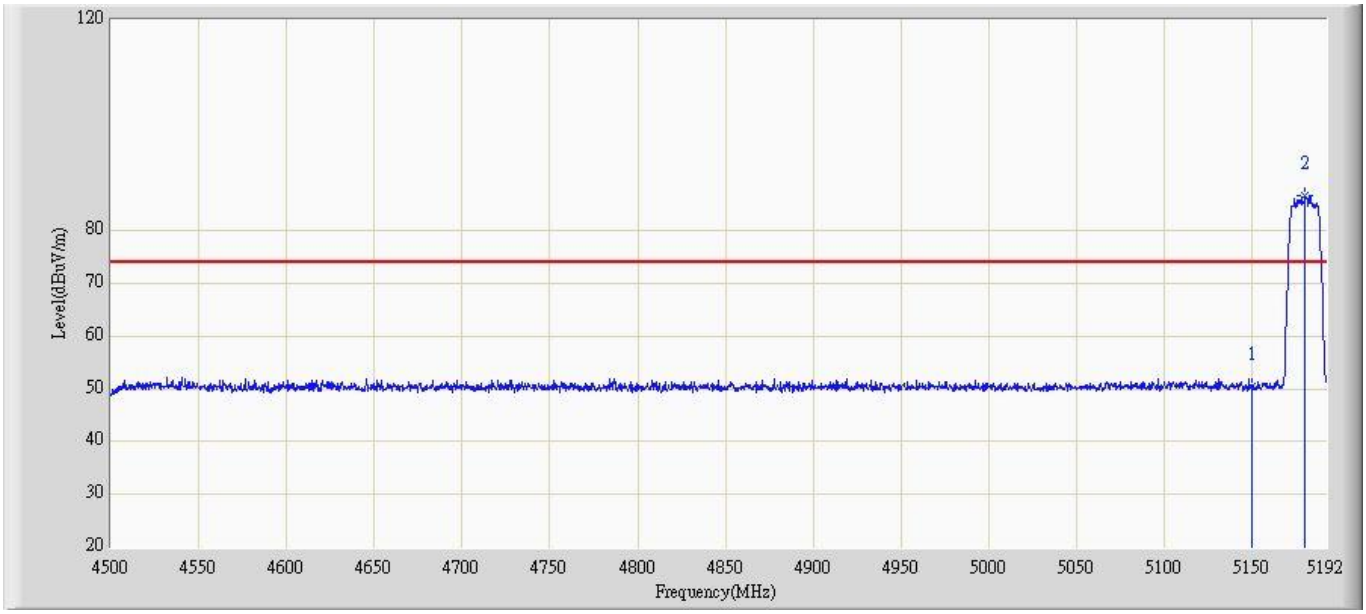
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5460.000	51.086	10.705	-22.914	74.000	40.382	PK
2		5470.000	50.579	10.183	-37.721	88.300	40.395	PK
3	*	5498.797	94.776	54.339	N/A	N/A	40.436	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 20:21
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 1: Transmit by 802.11a at 5500MHz Ant 0	



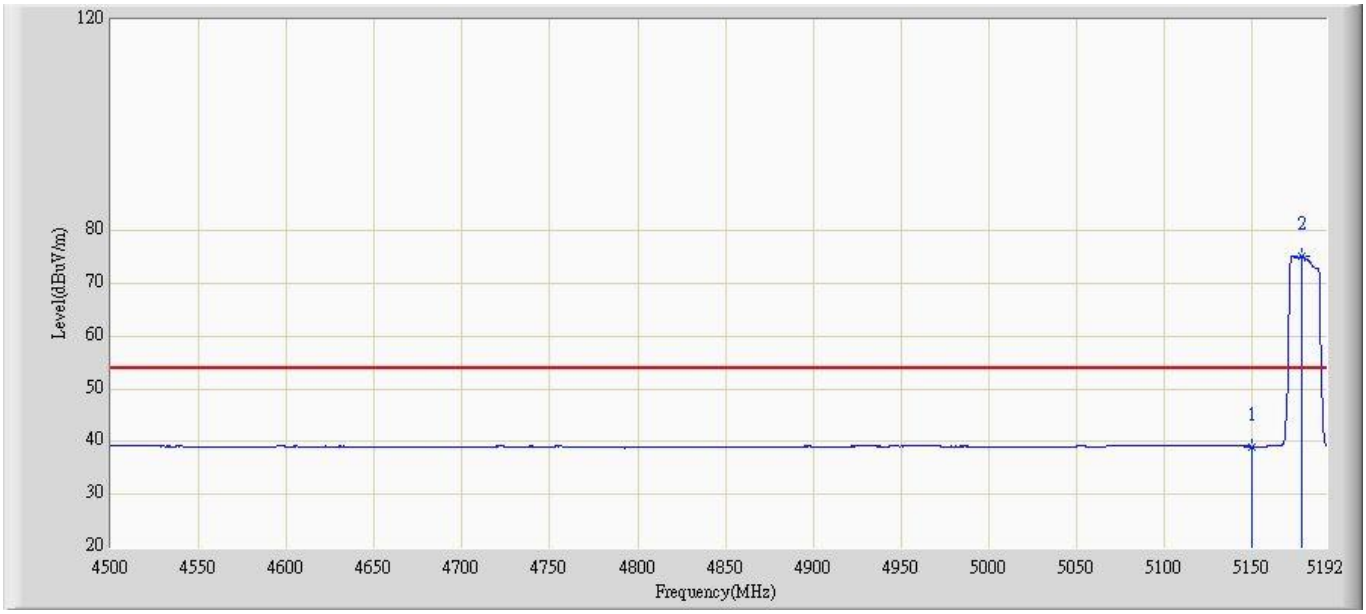
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5460.000	39.770	-0.611	-14.230	54.000	40.382	AV
2		5470.000	39.651	-0.745	-28.649	68.300	40.395	AV
3	*	5498.554	81.346	40.910	N/A	N/A	40.436	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 20:29
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 2: Transmit by 802.11n20MHz at 5180MHz Ant 1+2	



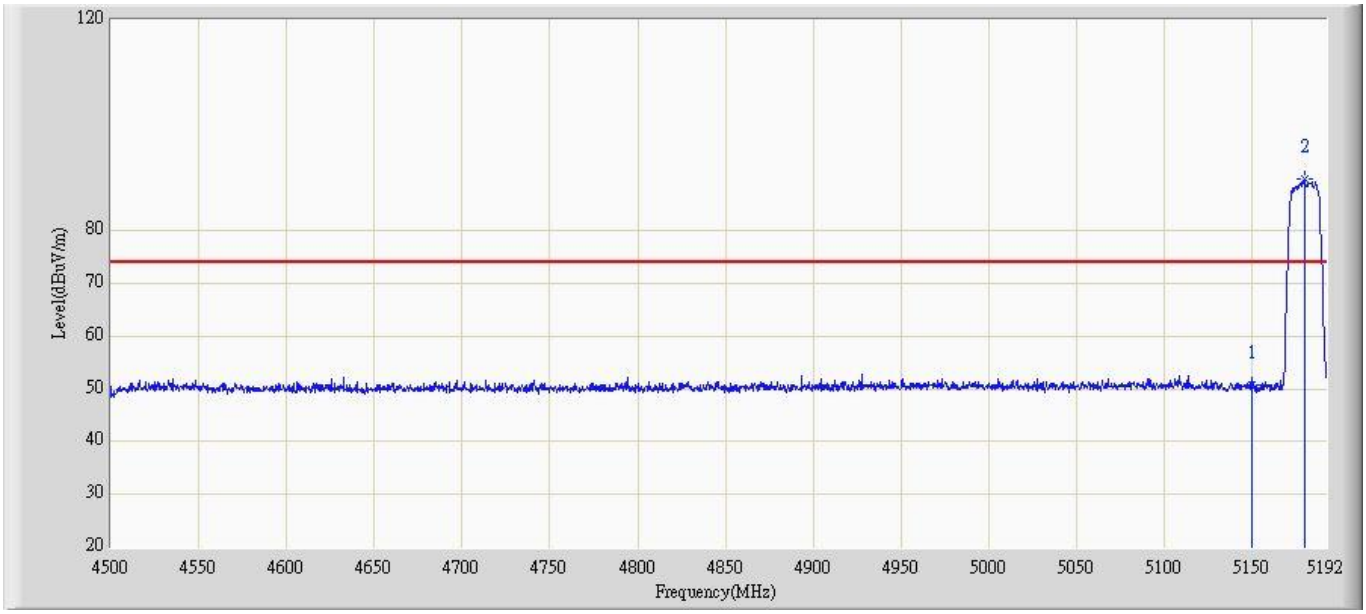
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150.000	50.575	10.554	-23.425	74.000	40.021	PK
2	*	5179.890	86.784	46.698	N/A	N/A	40.087	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 20:34
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 2: Transmit by 802.11n20MHz at 5180MHz Ant 1+2	



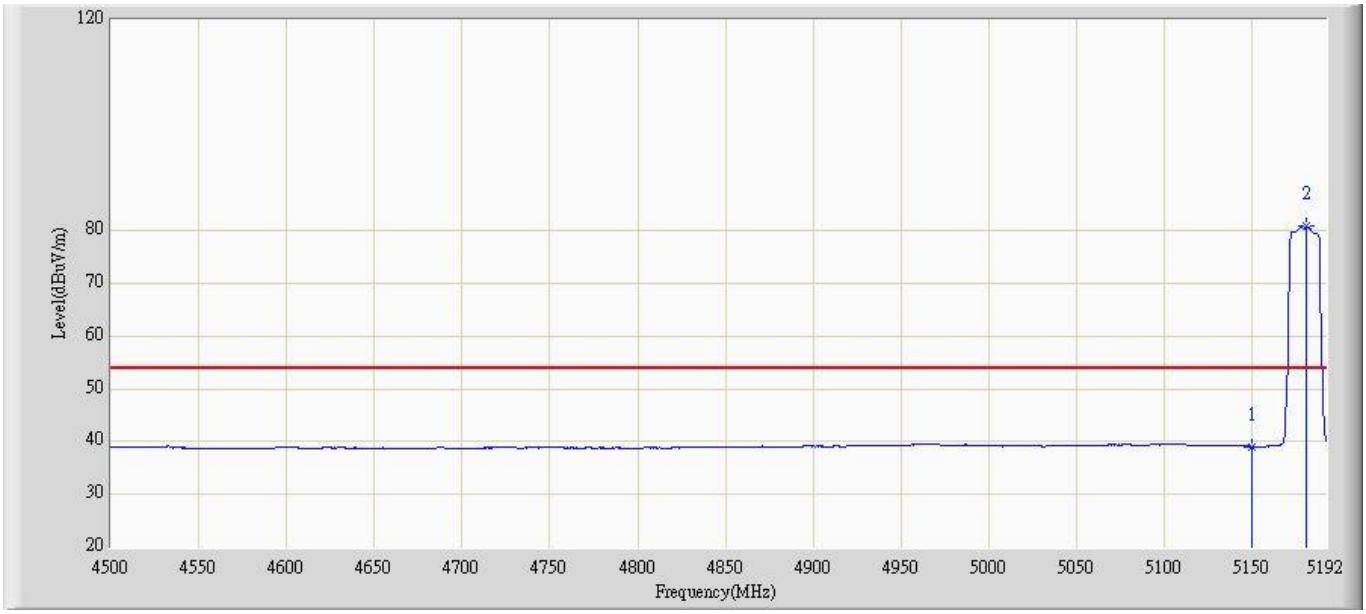
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150.000	39.054	-0.967	-14.946	54.000	40.021	AV
2	*	5178.506	75.149	35.066	N/A	N/A	40.083	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 20:35
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 2: Transmit by 802.11n20MHz at 5180MHz Ant 1+2	



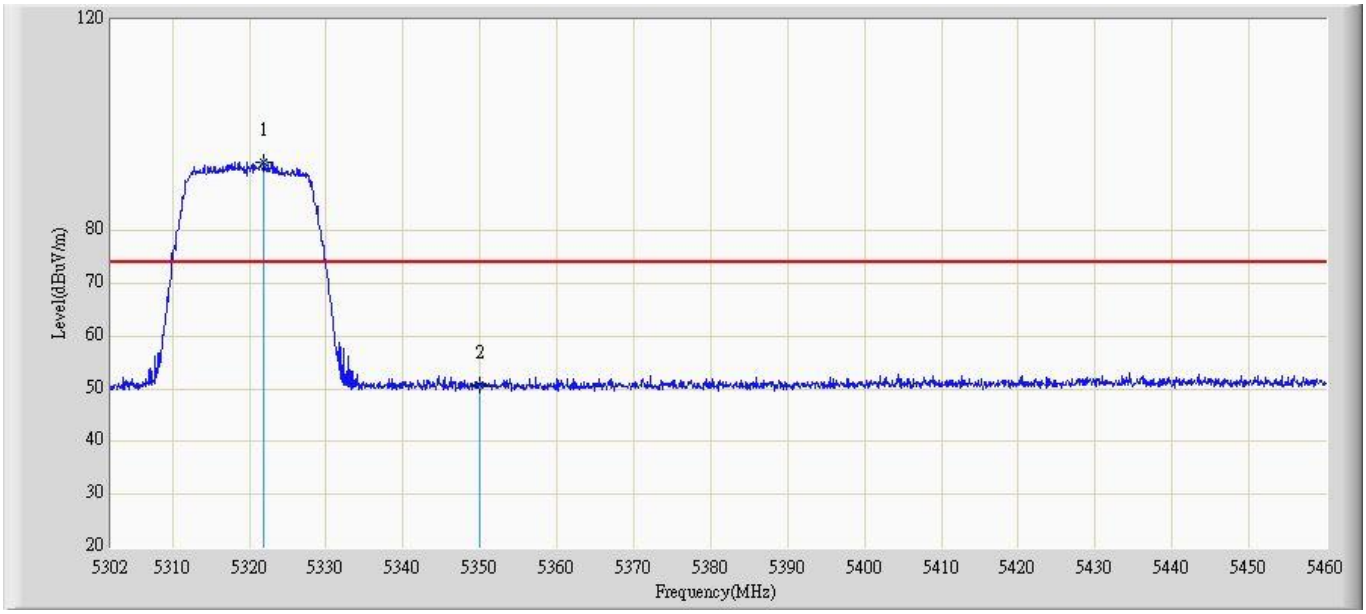
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150.000	50.686	10.705	-23.314	74.000	39.981	PK
2	*	5179.544	89.721	49.722	N/A	N/A	39.999	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 20:37
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 2: Transmit by 802.11n20MHz at 5180MHz Ant 1+2	



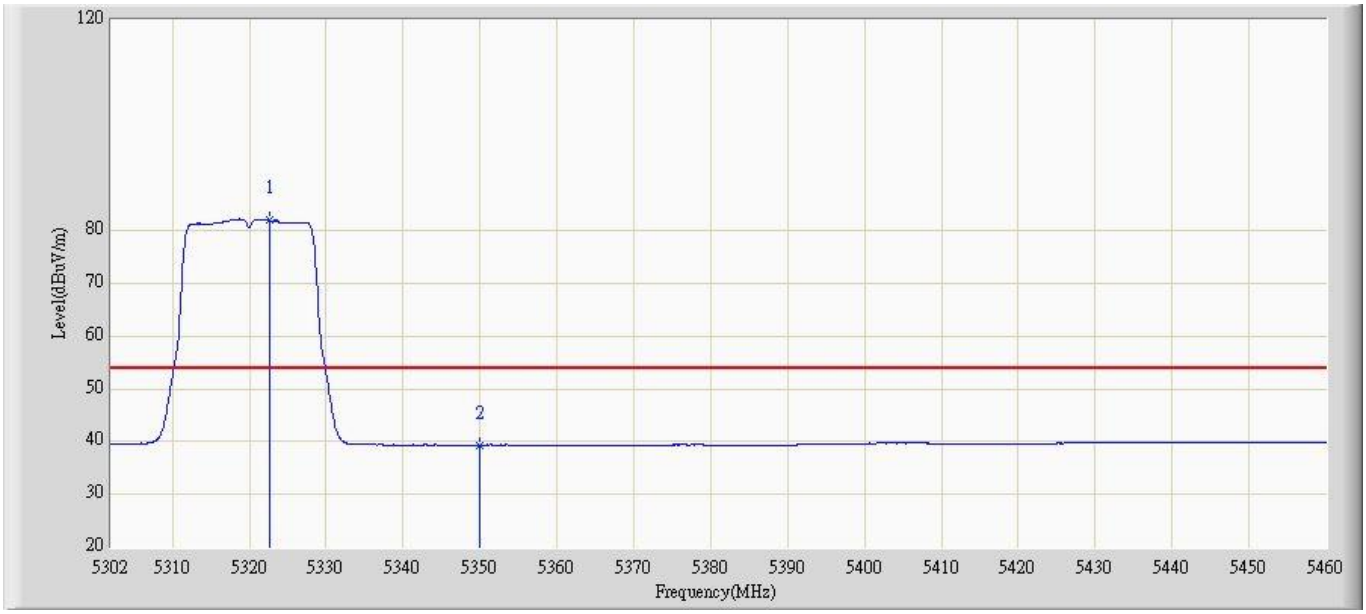
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150.000	39.033	-0.948	-14.967	54.000	39.981	AV
2	*	5180.928	80.779	40.780	N/A	N/A	39.999	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 20:47
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: : Mode 2: Transmit by 802.11n20MHz at 5320MHz Ant 1+2	



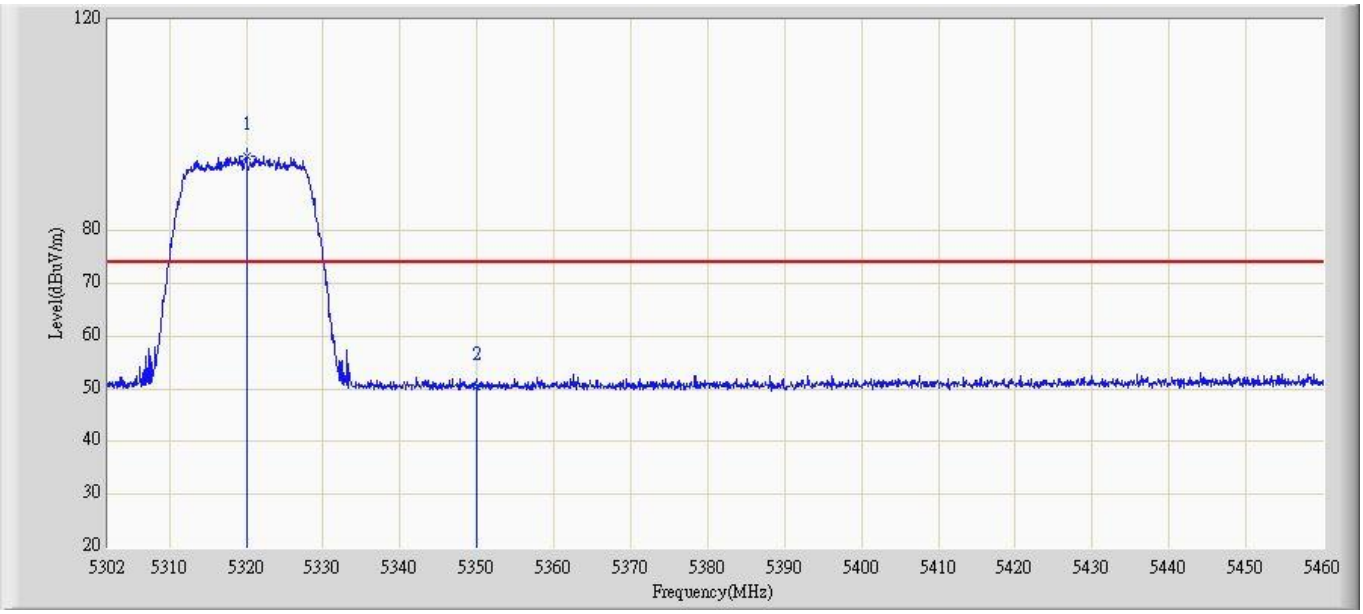
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	5321.908	93.037	52.890	N/A	N/A	40.147	AV
2		5350.000	50.861	10.682	-3.139	54.000	40.179	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 20:51
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: : Mode 2: Transmit by 802.11n20MHz at 5320MHz Ant 1+2	



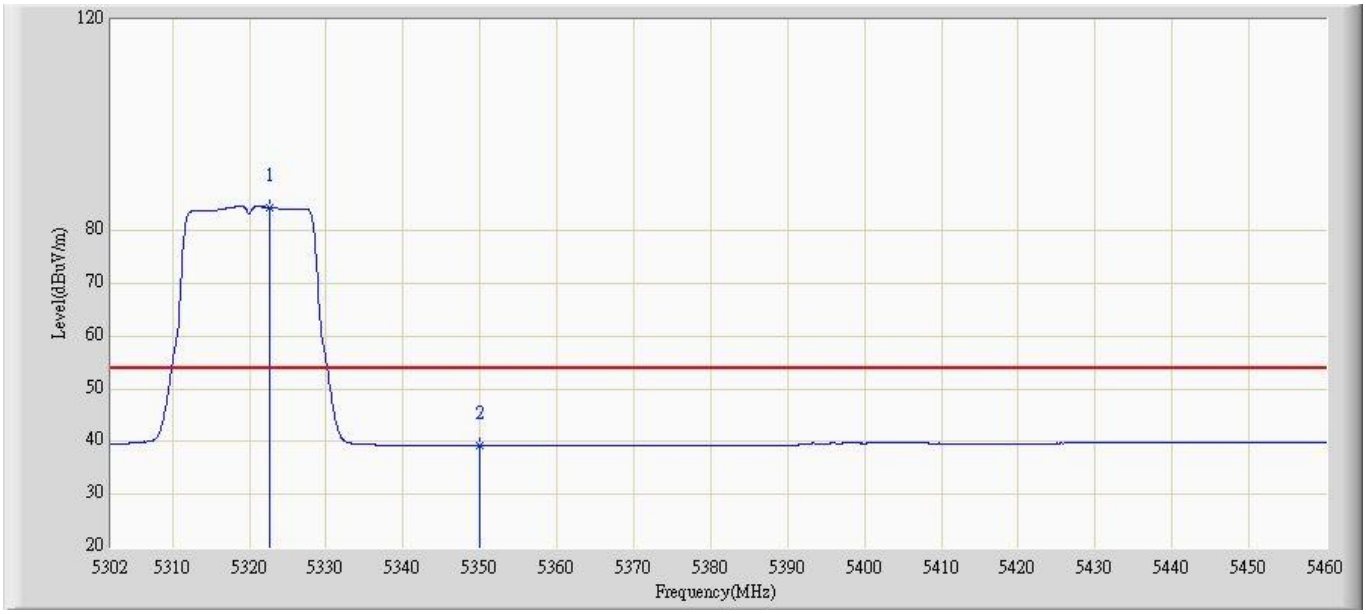
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	5322.540	81.958	41.639	N/A	N/A	40.319	AV
2		5350.000	39.371	-0.968	-14.629	54.000	40.339	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 20:51
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: : Mode 2: Transmit by 802.11n20MHz at 5320MHz Ant 1+2	



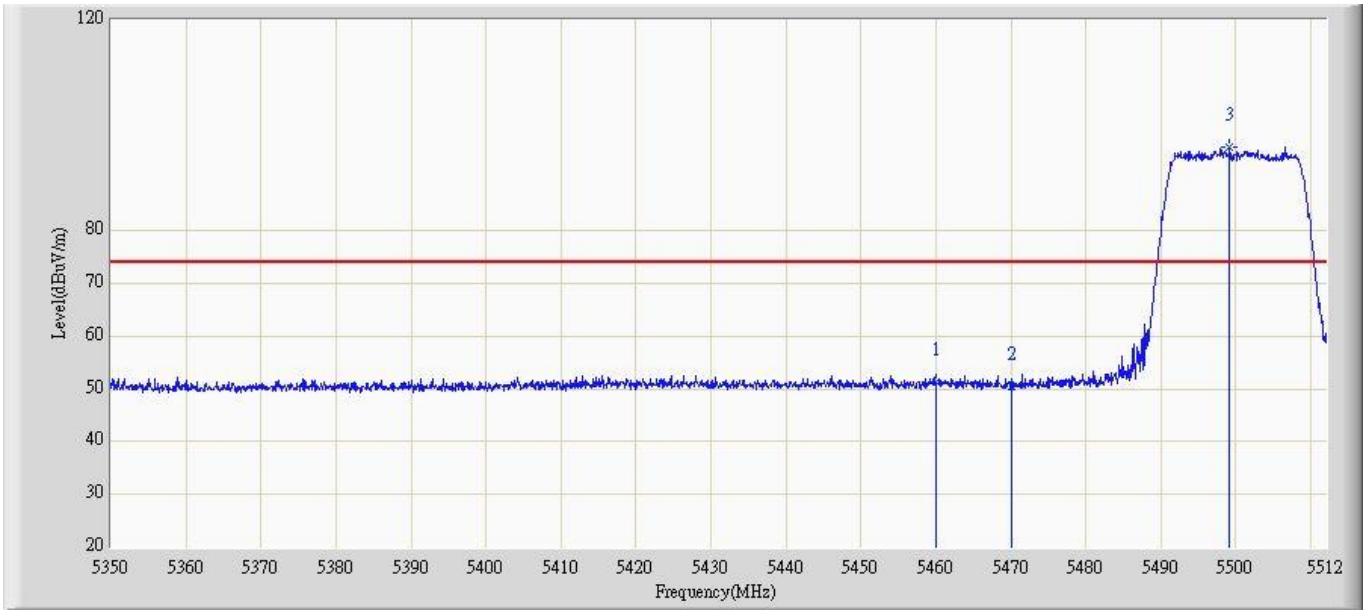
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	5320.091	94.025	53.879	N/A	N/A	40.146	PK
2		5350.000	50.548	10.369	-23.452	74.000	40.179	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 20:53
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: : Mode 2: Transmit by 802.11n20MHz at 5320MHz Ant 1+2	



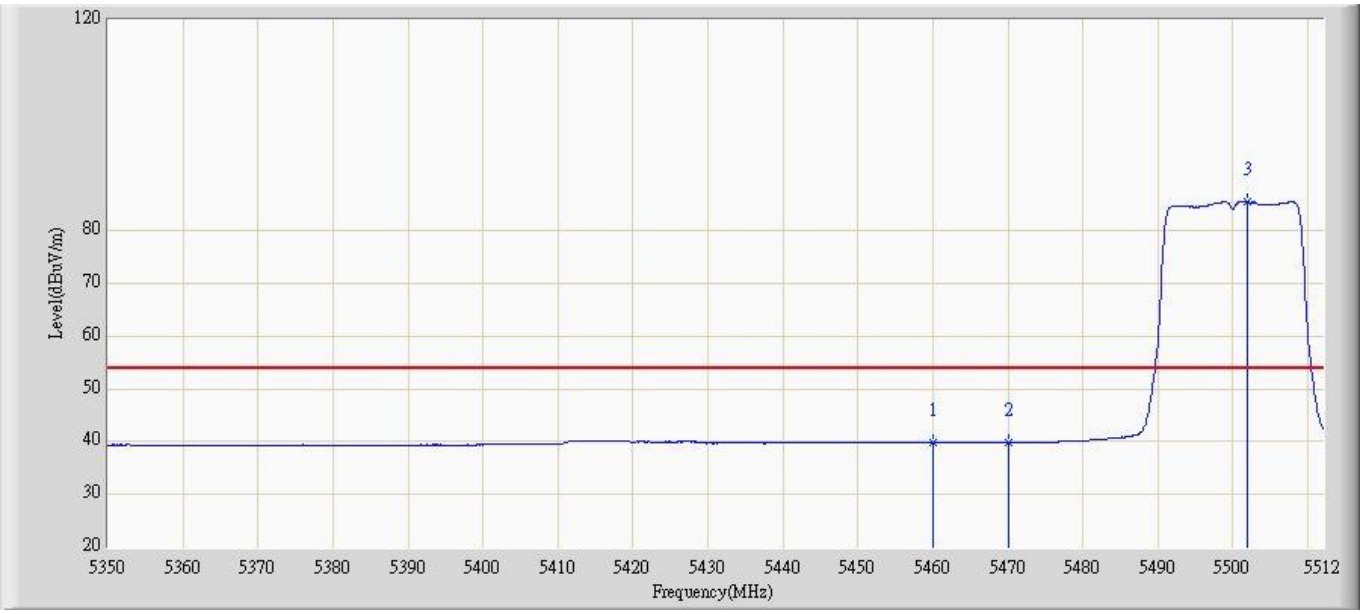
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	5322.540	84.468	44.320	N/A	N/A	40.148	AV
2		5350.000	39.290	-0.889	-14.710	54.000	40.179	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 21:01
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: : Mode 2: Transmit by 802.11n20MHz at 5500MHz Ant 1+2	



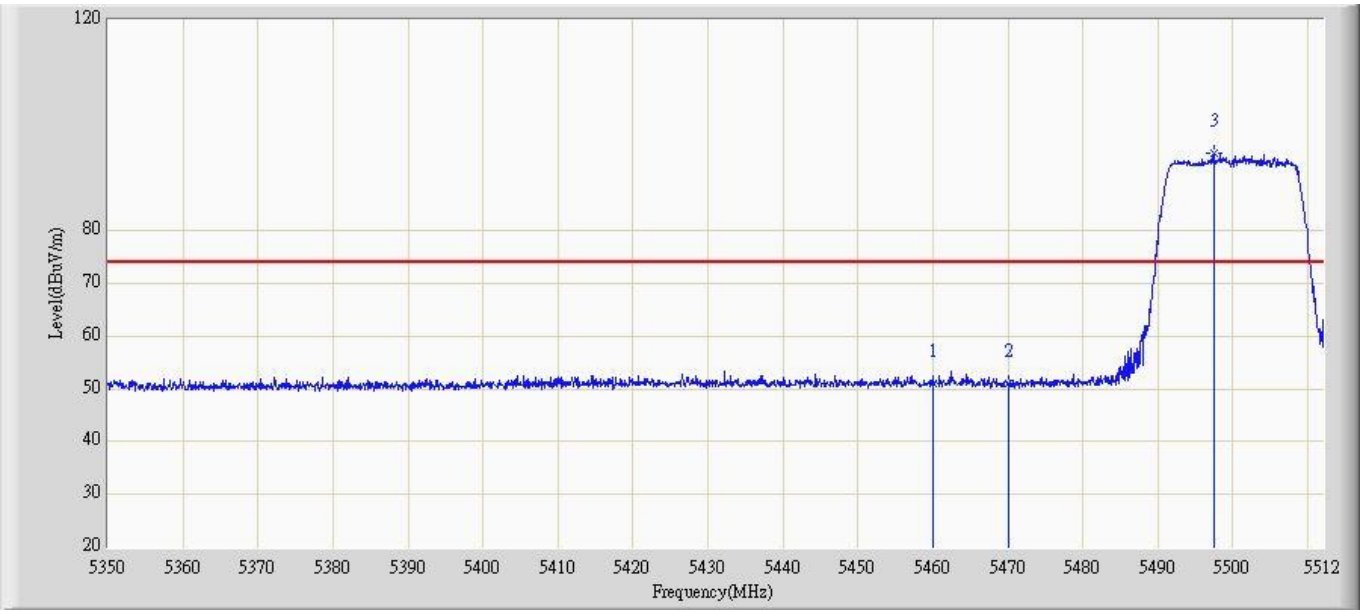
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5460.000	51.365	10.867	-22.635	74.000	40.498	PK
2		5470.000	50.524	10.017	-37.776	88.300	40.507	PK
3	*	5499.121	95.862	55.325	N/A	N/A	40.538	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 21:02
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: : Mode 2: Transmit by 802.11n20MHz at 5500MHz Ant 1+2	



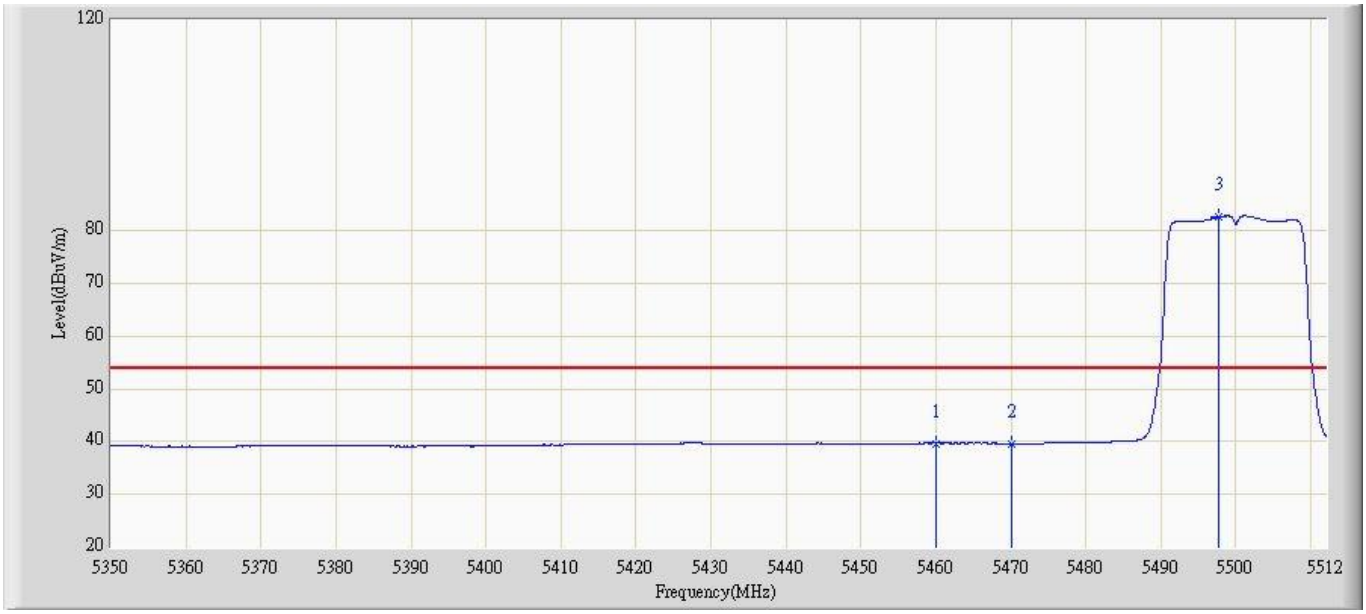
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5460.000	39.851	-0.647	-14.149	54.000	40.498	AV
2		5470.000	39.776	-0.731	-28.524	68.300	40.507	AV
3	*	5501.875	85.401	44.860	N/A	N/A	40.540	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 21:03
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: : Mode 2: Transmit by 802.11n20MHz at 5500MHz Ant 1+2	



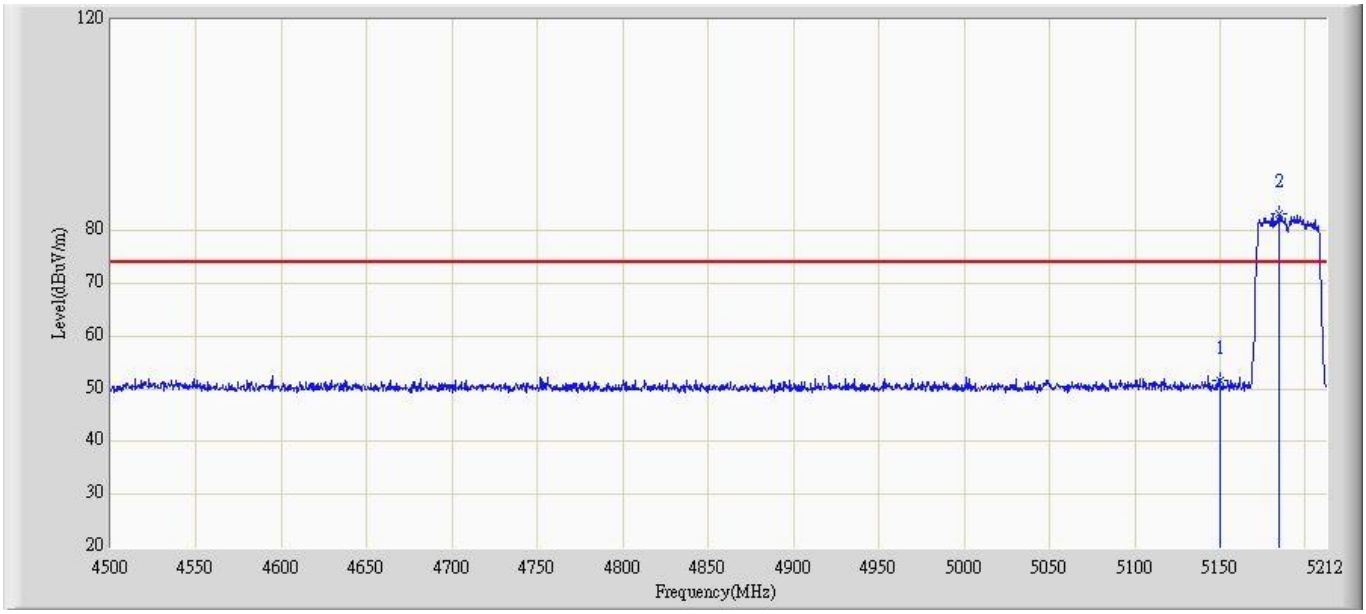
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5460.000	51.157	10.776	-22.843	74.000	40.382	PK
2		5470.000	50.978	10.582	-37.322	88.300	40.395	PK
3	*	5497.501	94.686	54.251	N/A	N/A	40.435	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 21:05
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: : Mode 2: Transmit by 802.11n20MHz at 5500MHz Ant 1+2	



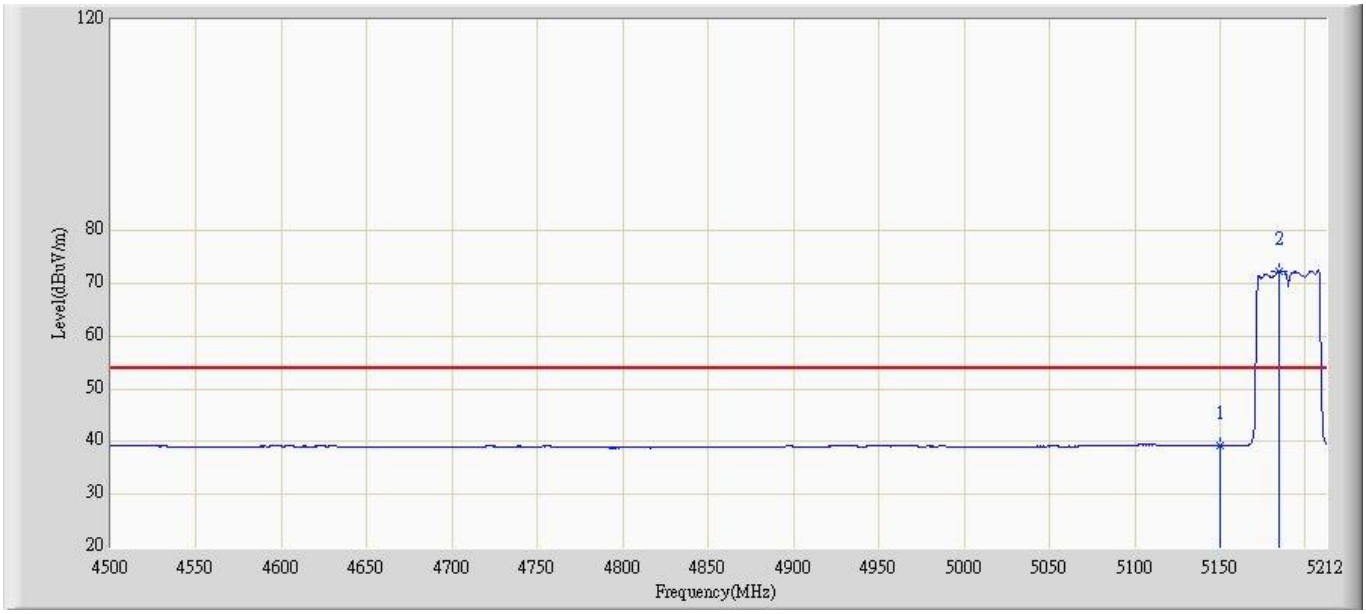
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5460.000	39.675	-0.706	-14.325	54.000	40.382	AV
2		5470.000	39.554	-0.842	-28.746	68.300	40.395	AV
3	*	5497.744	82.608	42.173	N/A	N/A	40.435	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 21:12
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n40MHz at 5190MHz Ant 1+2	



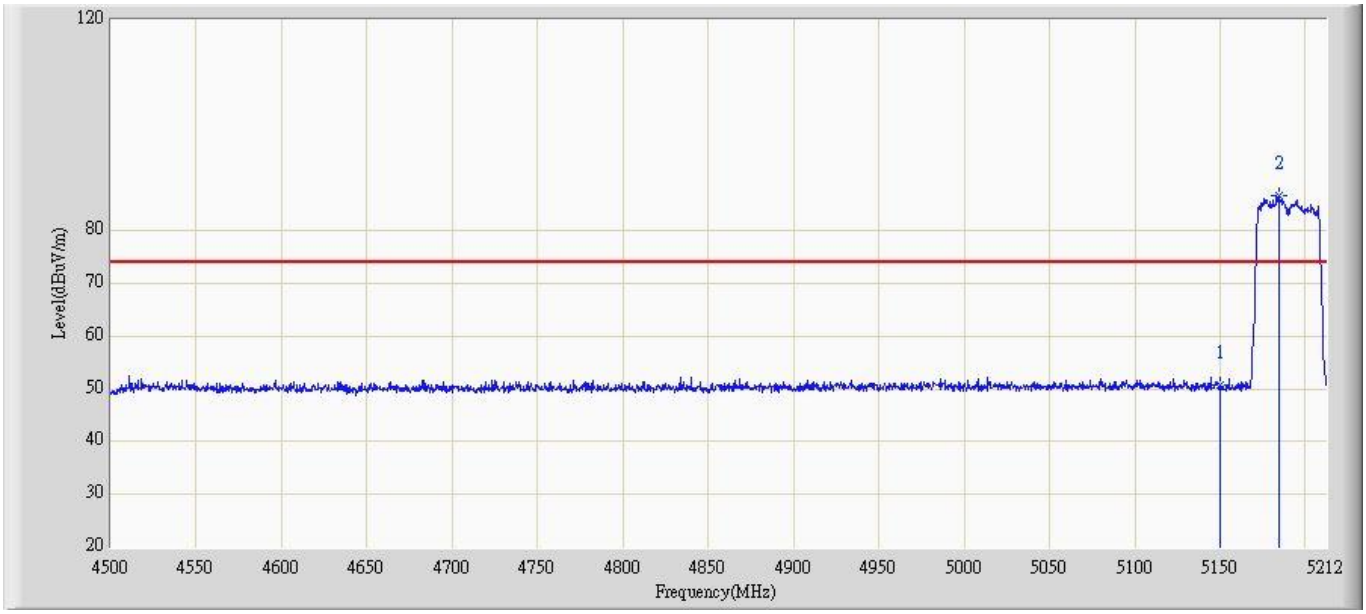
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150.000	51.574	11.553	-22.426	74.000	40.021	PK
2	*	5184.588	83.141	43.043	N/A	N/A	40.098	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 21:17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n40MHz at 5190MHz Ant 1+2	



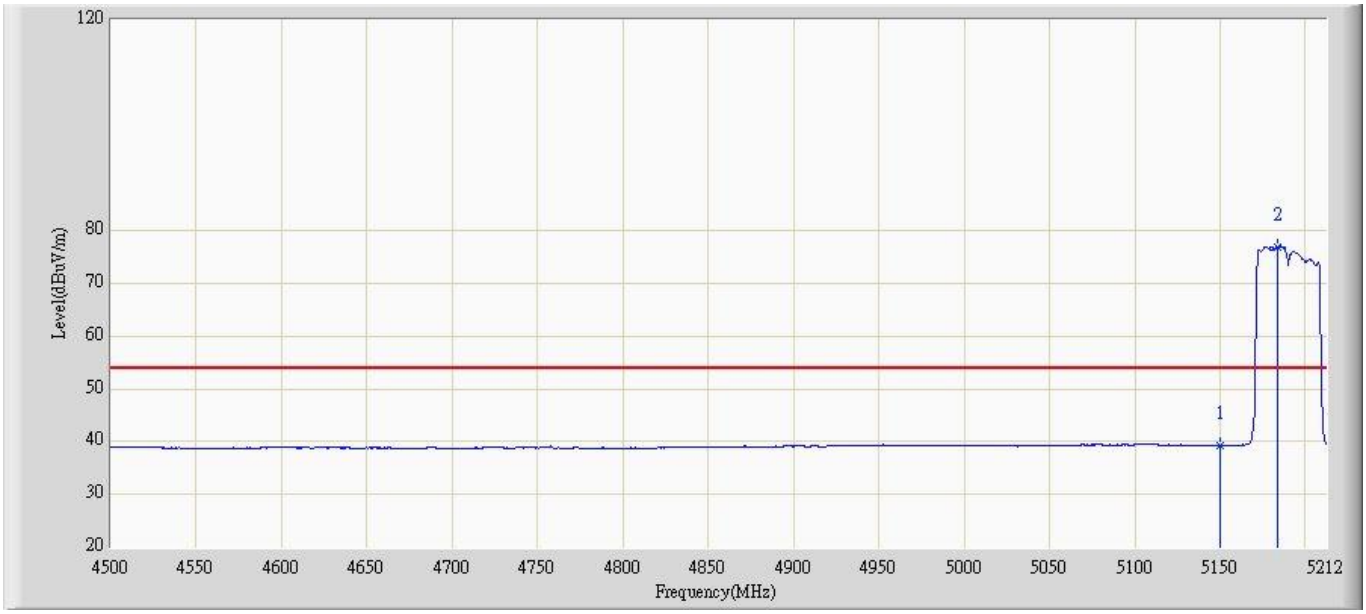
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150.000	39.167	-0.854	-14.833	54.000	40.021	AV
2	*	5184.944	72.374	32.275	N/A	N/A	40.099	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 21:19
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n40MHz at 5190MHz Ant 1+2	



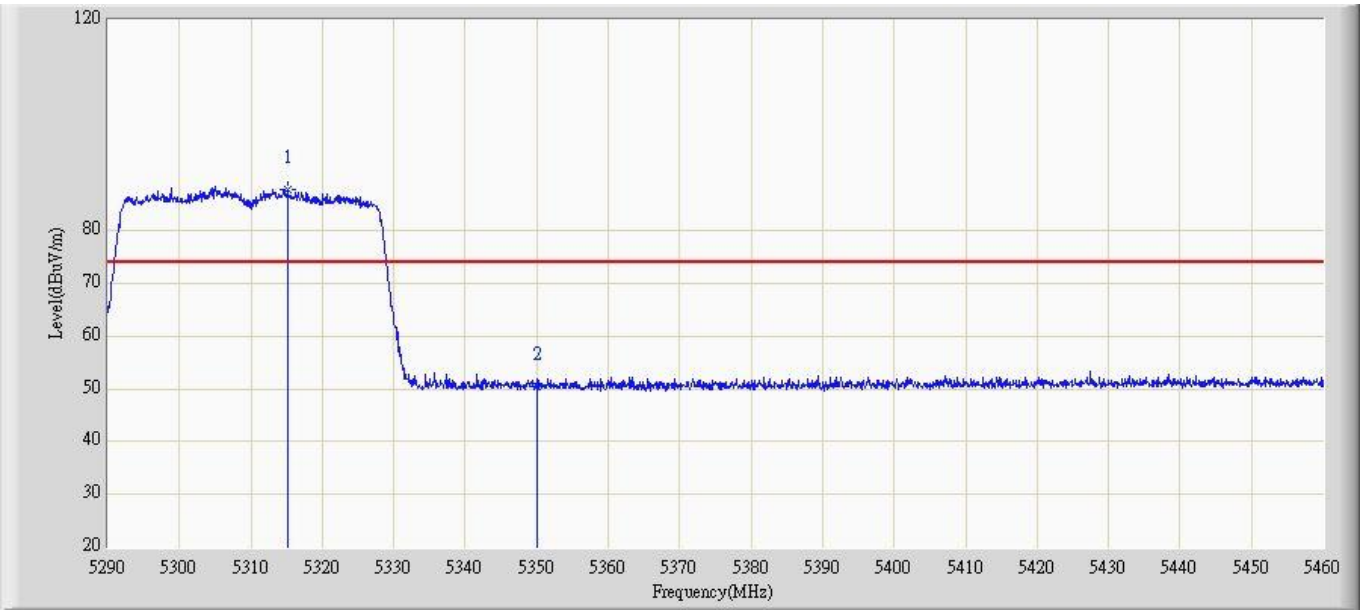
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150.000	50.625	10.644	-23.375	74.000	39.981	PK
2	*	5184.588	86.798	46.795	N/A	N/A	40.003	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 21:21
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n40MHz at 5190MHz Ant 1+2	



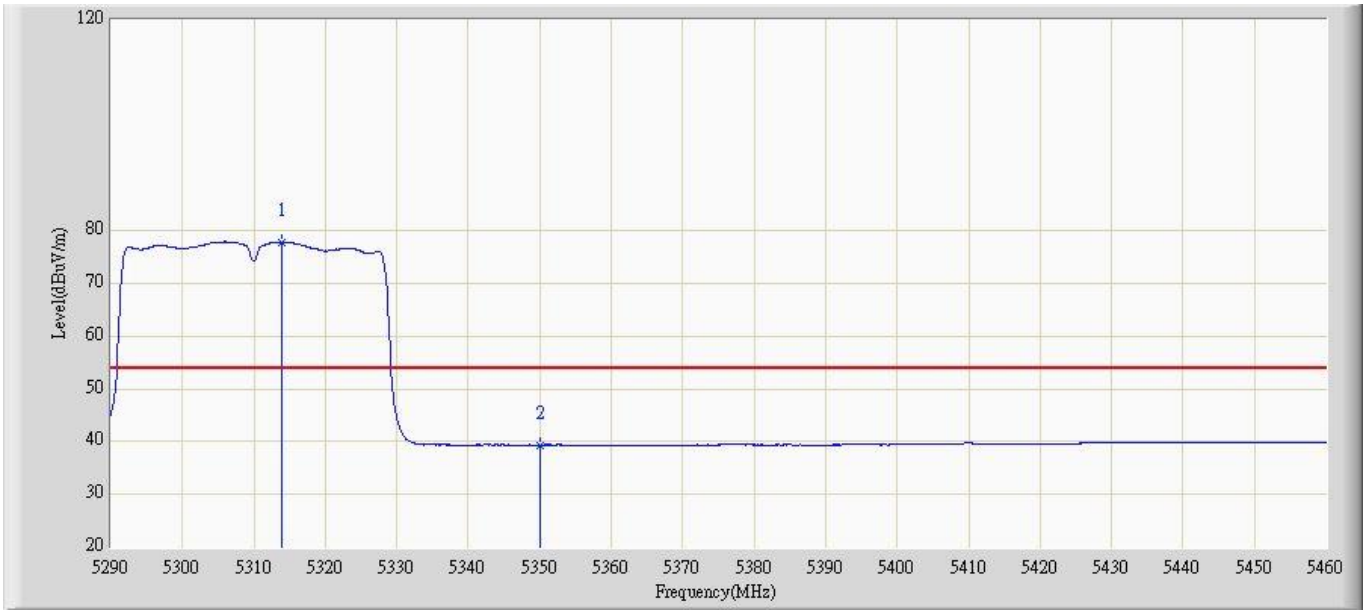
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150.000	39.155	-0.826	-14.845	54.000	39.981	AV
2	*	5183.876	77.006	37.004	N/A	N/A	40.002	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 21:32
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n40MHz at 5310MHz Ant 1+2	



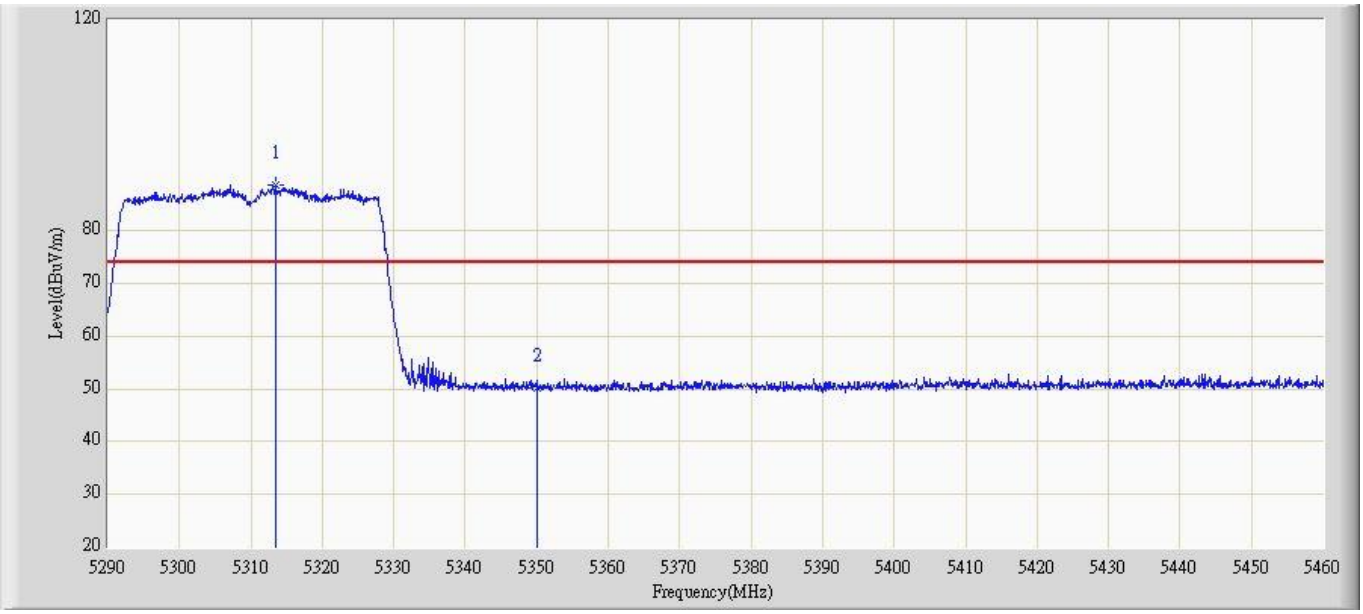
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	5315.160	87.880	47.566	N/A	N/A	40.314	PK
2		5350.000	50.383	10.044	-23.617	74.000	40.339	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 21:34
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n40MHz at 5310MHz Ant 1+2	



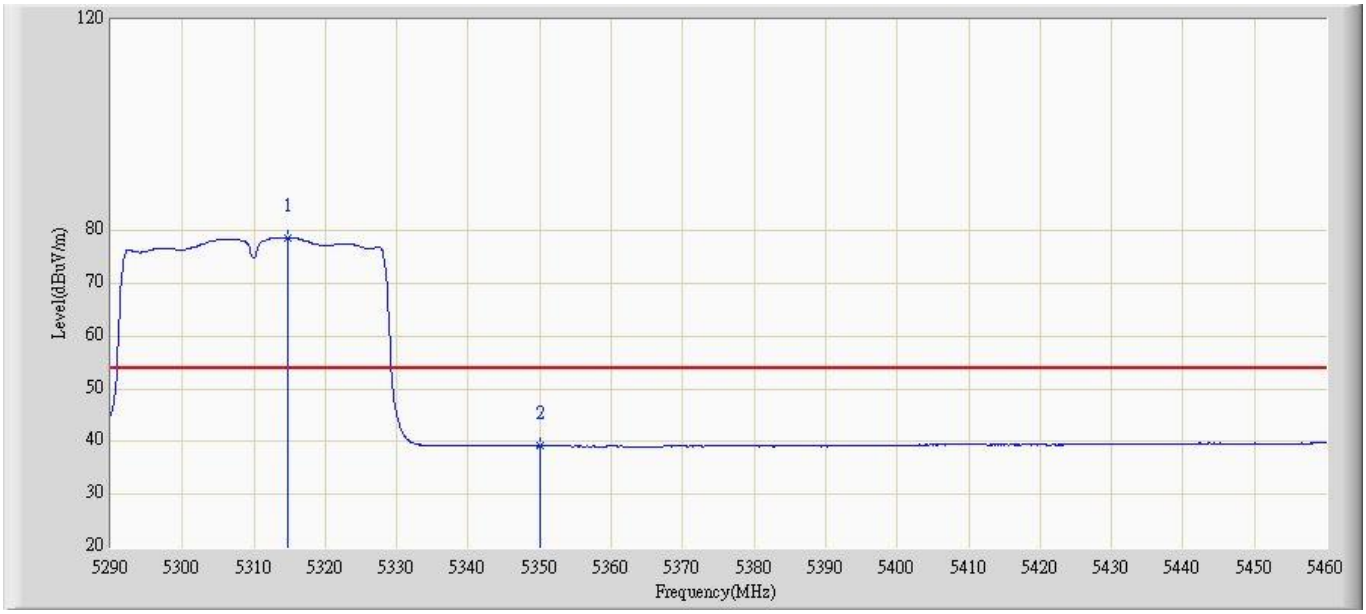
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	5313.970	77.868	37.555	N/A	N/A	40.313	AV
2		5350.000	39.363	-0.976	-14.637	54.000	40.339	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 21:35
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n40MHz at 5310MHz Ant0	



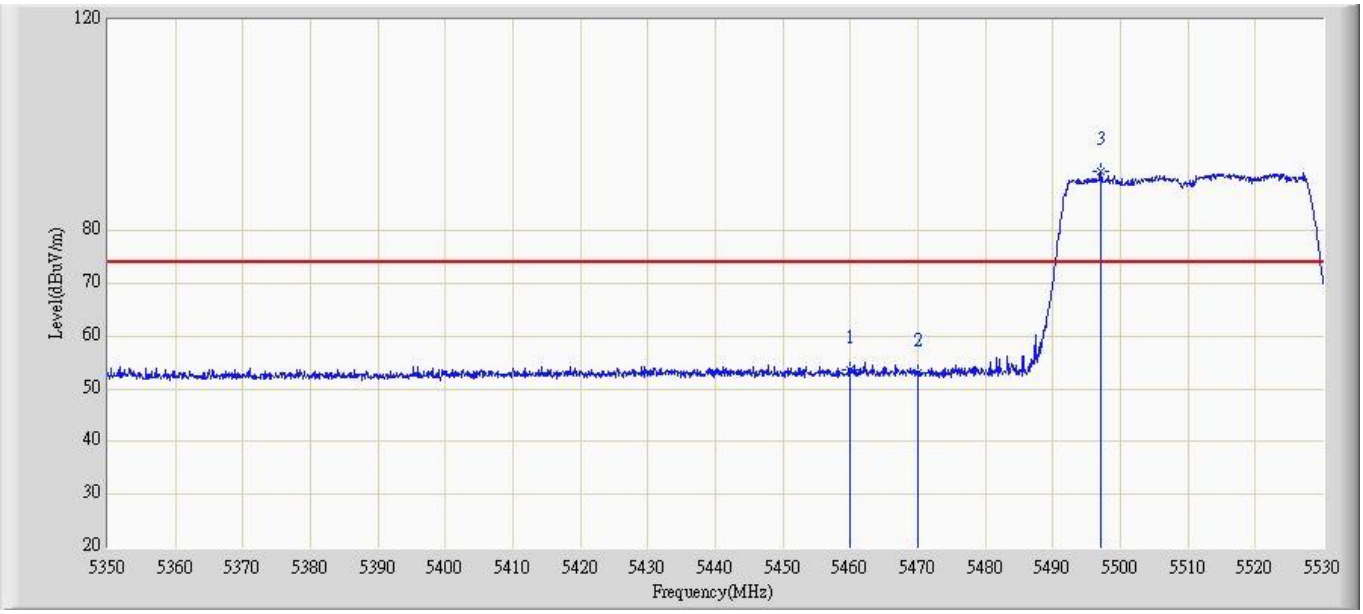
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	5313.460	88.613	48.475	N/A	N/A	40.138	PK
2		5350.000	50.311	10.132	-23.689	74.000	40.179	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 21:36
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n40MHz at 5310MHz Ant 1+2	



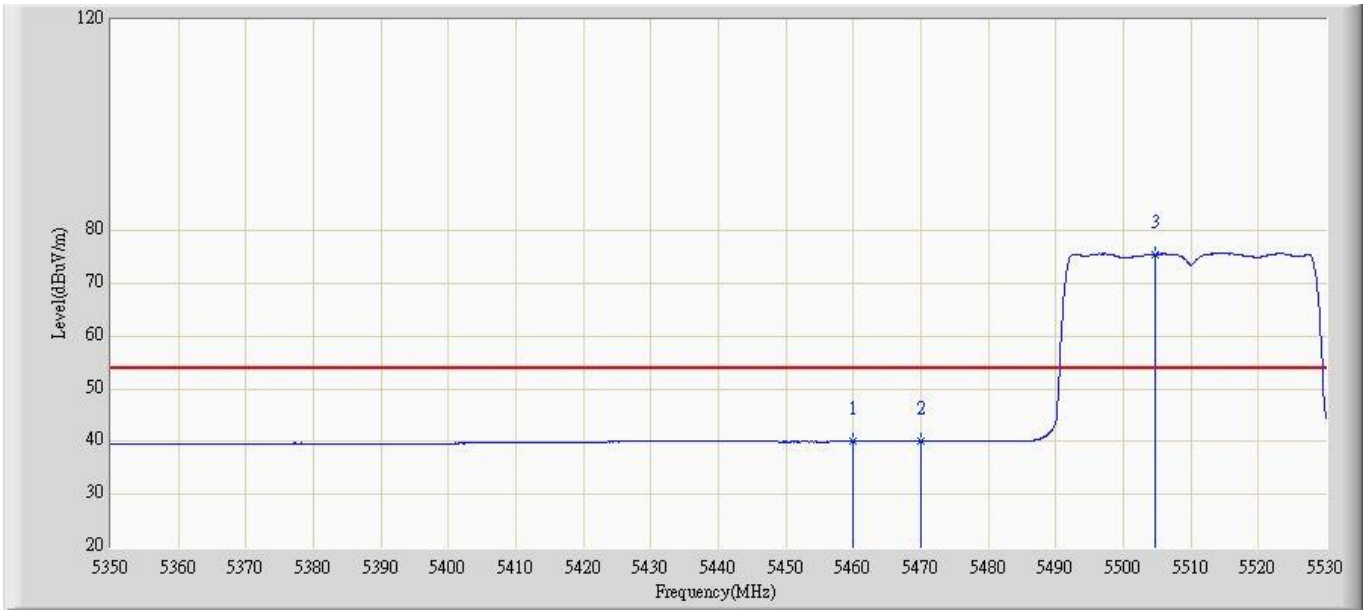
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	5314.735	78.727	38.587	N/A	N/A	40.140	AV
2		5350.000	39.200	-0.979	-14.800	54.000	40.179	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 21:43
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n40MHz at 5510MHz Ant 1+2	



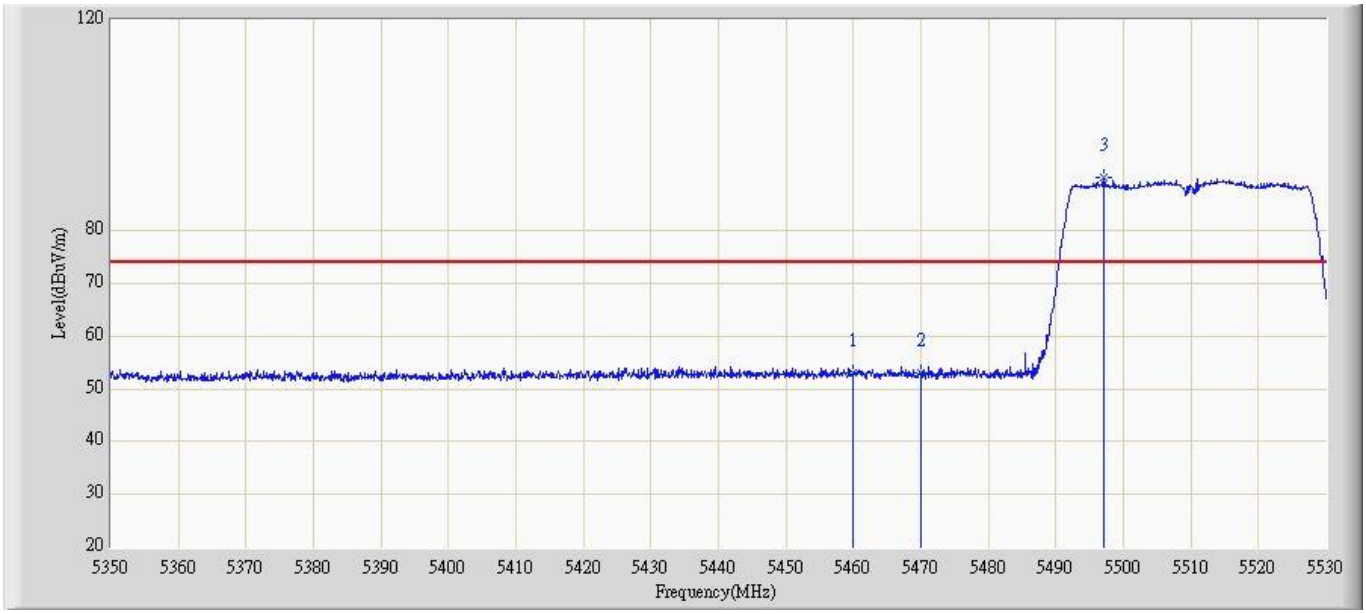
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5460.000	53.637	13.139	-20.363	74.000	40.498	PK
2		5470.000	53.025	12.518	-35.275	88.300	40.507	PK
3	*	5497.060	91.220	50.685	N/A	N/A	40.535	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 21:49
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n40MHz at 5510MHz Ant 1+2	



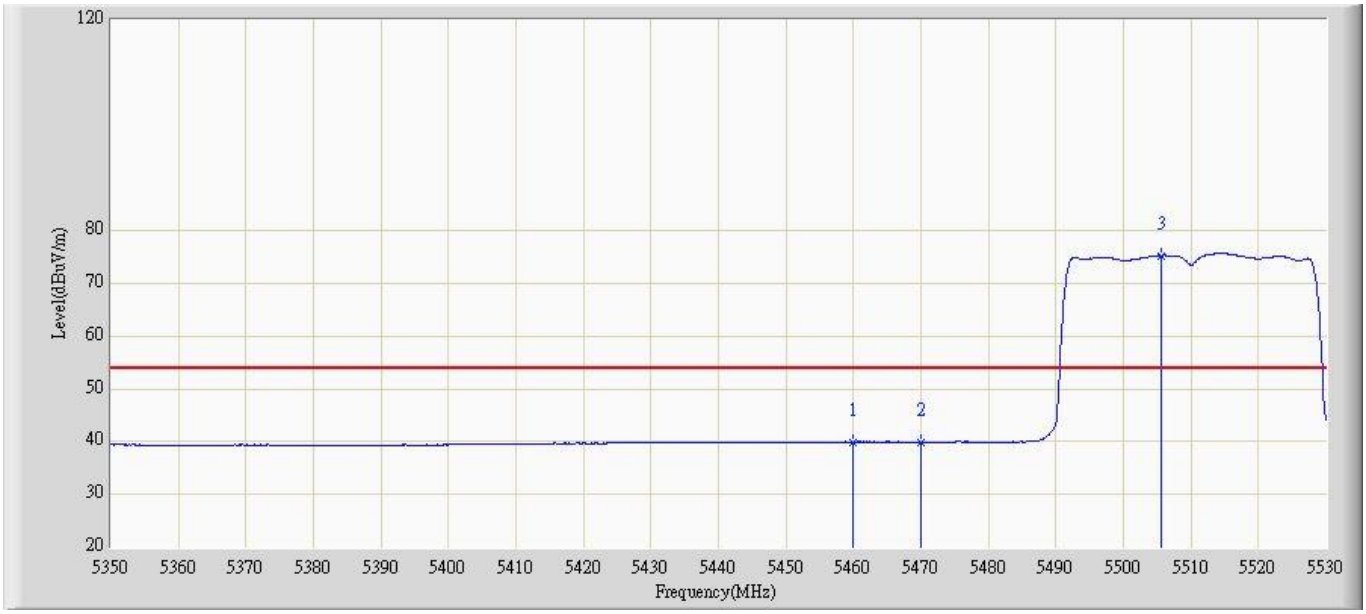
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5460.000	40.109	-0.389	-13.891	54.000	40.498	AV
2		5470.000	40.043	-0.464	-28.257	68.300	40.507	AV
3	*	5504.710	75.585	35.041	N/A	N/A	40.544	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 21:49
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n40MHz at 5510MHz Ant 1+2	



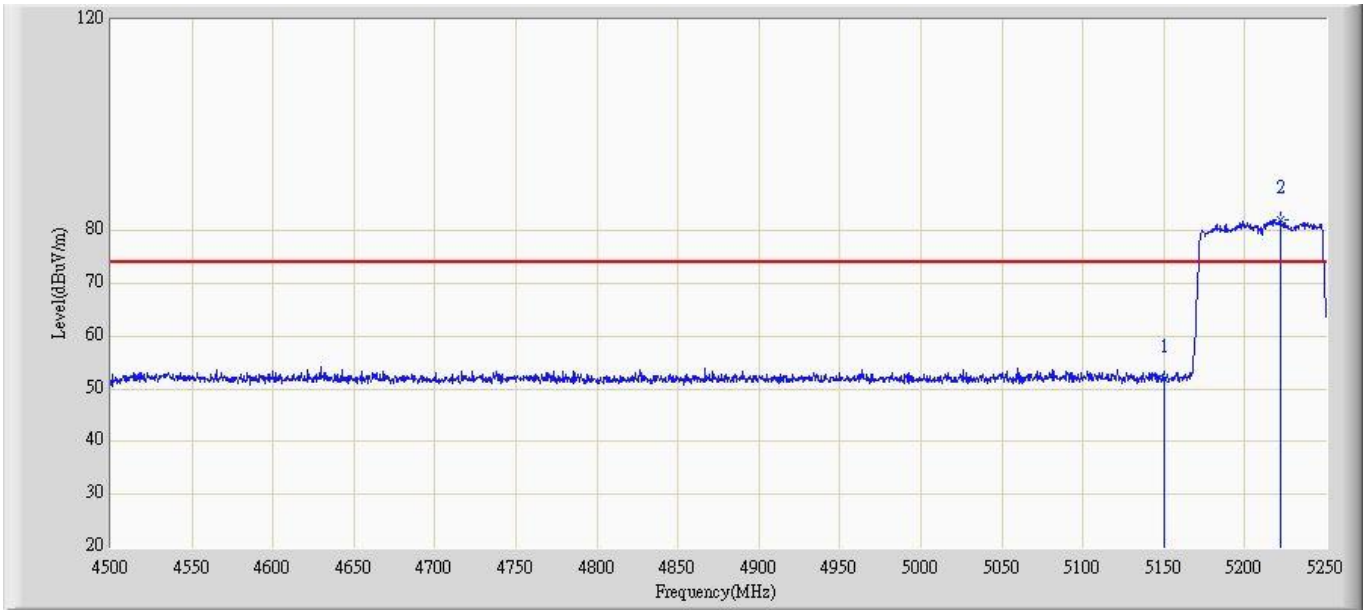
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5460.000	53.018	12.637	-20.982	74.000	40.382	PK
2		5470.000	53.074	12.678	-35.226	88.300	40.395	PK
3	*	5497.150	90.057	49.623	N/A	N/A	40.434	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 21:51
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 3: Transmit by 802.11n40MHz at 5510MHz Ant 1+2	



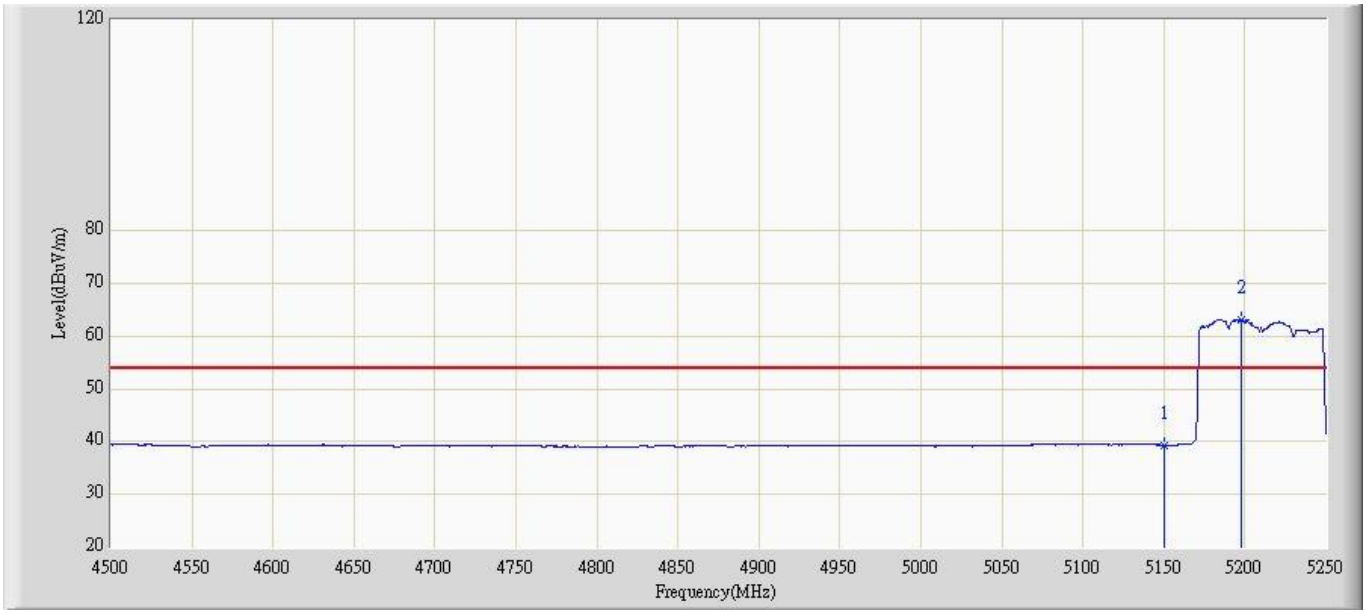
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5460.000	39.935	-0.446	-14.065	54.000	40.382	AV
2		5470.000	39.853	-0.543	-28.447	68.300	40.395	AV
3	*	5505.520	75.280	34.833	N/A	N/A	40.447	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 21:57
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 4: Transmit by 802.11ac80MHz at 5210MHz Ant 1+2	



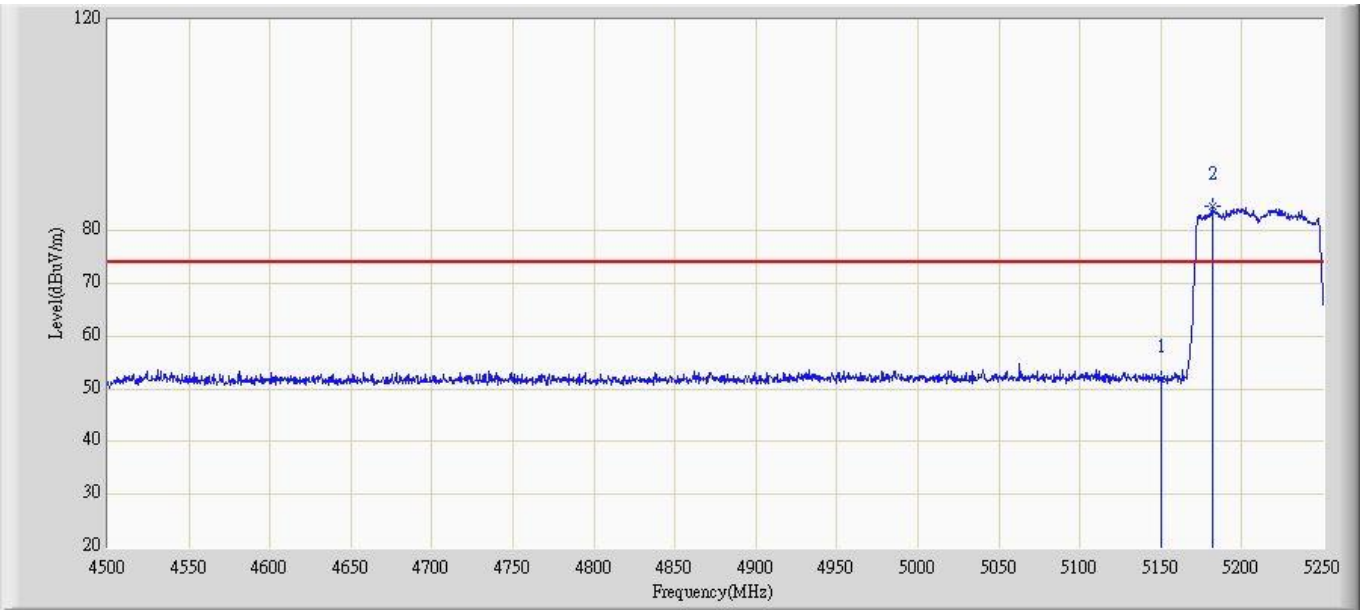
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150.000	51.834	11.813	-22.166	74.000	40.021	PK
2	*	5222.250	82.162	41.972	N/A	N/A	40.190	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 22:01
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 4: Transmit by 802.11ac80MHz at 5210MHz Ant 1+2	



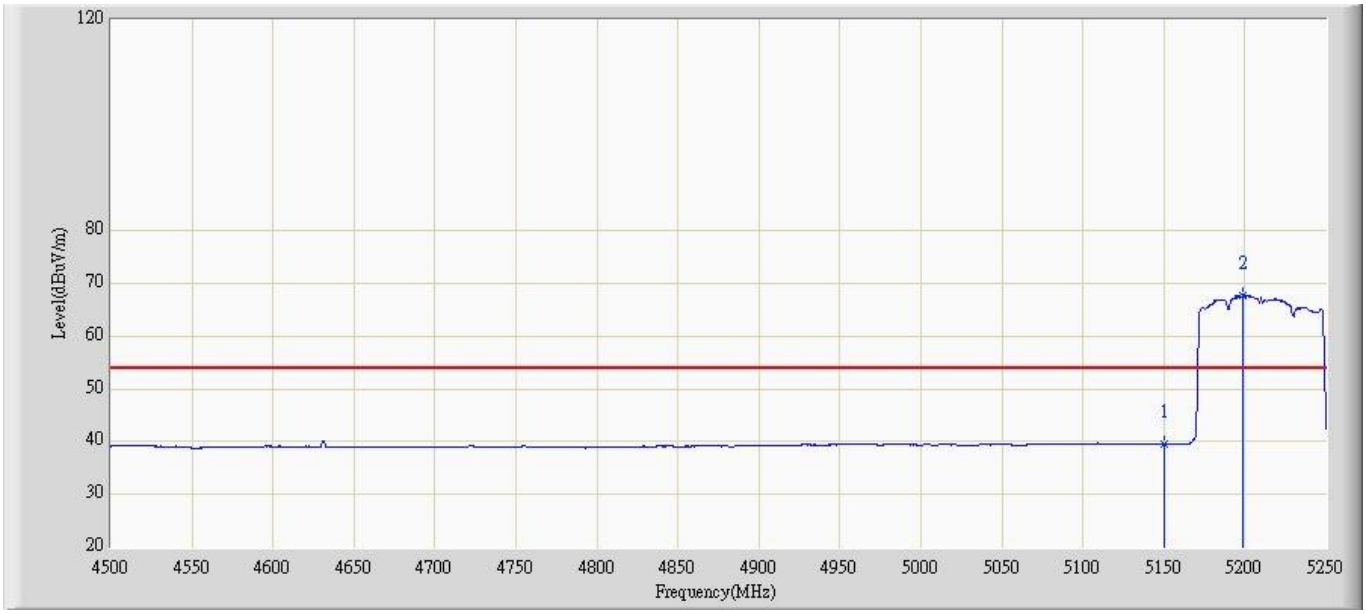
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150.000	39.332	-0.689	-14.668	54.000	40.021	AV
2	*	5197.500	63.025	22.891	N/A	N/A	40.134	AV

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 22:02
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 4: Transmit by 802.11ac80MHz at 5210MHz Ant 1+2	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150.000	51.797	11.816	-22.203	74.000	39.981	PK
2	*	5181.750	84.674	44.674	N/A	N/A	40.000	PK

Engineer: Emin	
Site: AC5	Time: 2013/03/16 - 22:03
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card	Power: AC 120V/60Hz
Note: Mode 4: Transmit by 802.11ac80MHz at 5210MHz Ant 1+2	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		5150.000	39.429	-0.552	-14.571	54.000	39.981	AV
2	*	5198.250	67.694	27.675	N/A	N/A	40.019	AV

5. Receiver Spurious Emission for Industry Canada RSS-Gen Requirement

5.1. Test Equipment

Radiated Emission / AC-2

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
EMI Test Receiver	R&S	ESCI	100573	2014.04.18
Loop Antenna	R&S	HFH2-Z2	833799/003	2013.11.22
Bilog Antenna	Teseq GmbH	CBL6112D	27611	2013.10.15
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2014.03.01
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC2-TH	2014.05.07

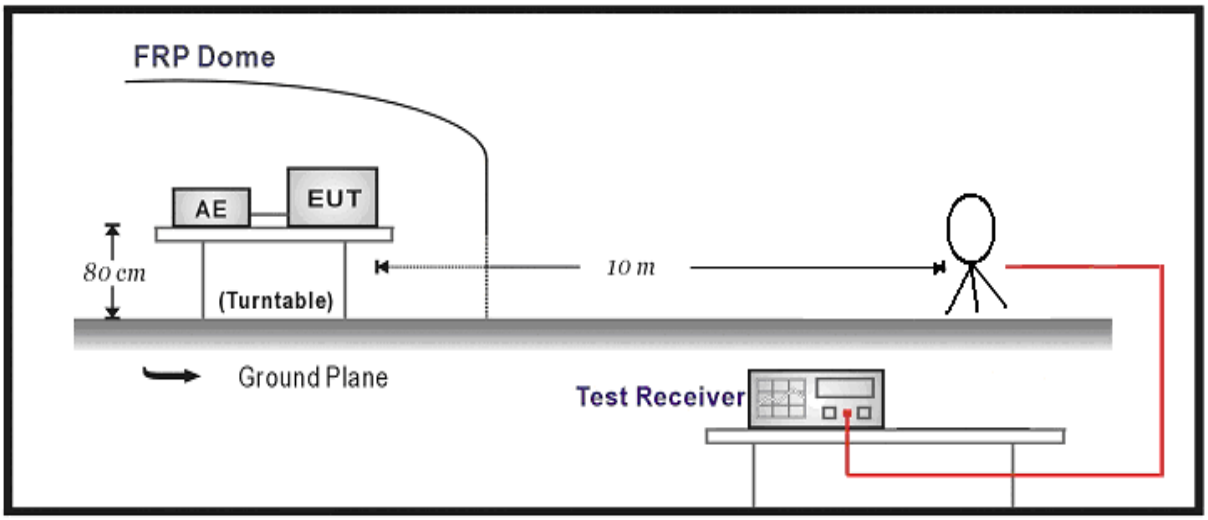
Radiated Emission / AC-5

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	N9020A	MY49100159	2014.03.30
Preamplifier	Miteq	NSP1800-25	1364185	2014.05.04
Preamplifier	QuieTek	AP-040G	CHM-0906001	2014.05.04
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2013.10.15
DRG Horn	ETS-Lindgren	3117	00123988	2014.01.21
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2013.11.24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2014.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2014.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2014.03.01
EMI Receiver	Agilent	N9038A	MY51210196	2013.06.11
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2014.01.11

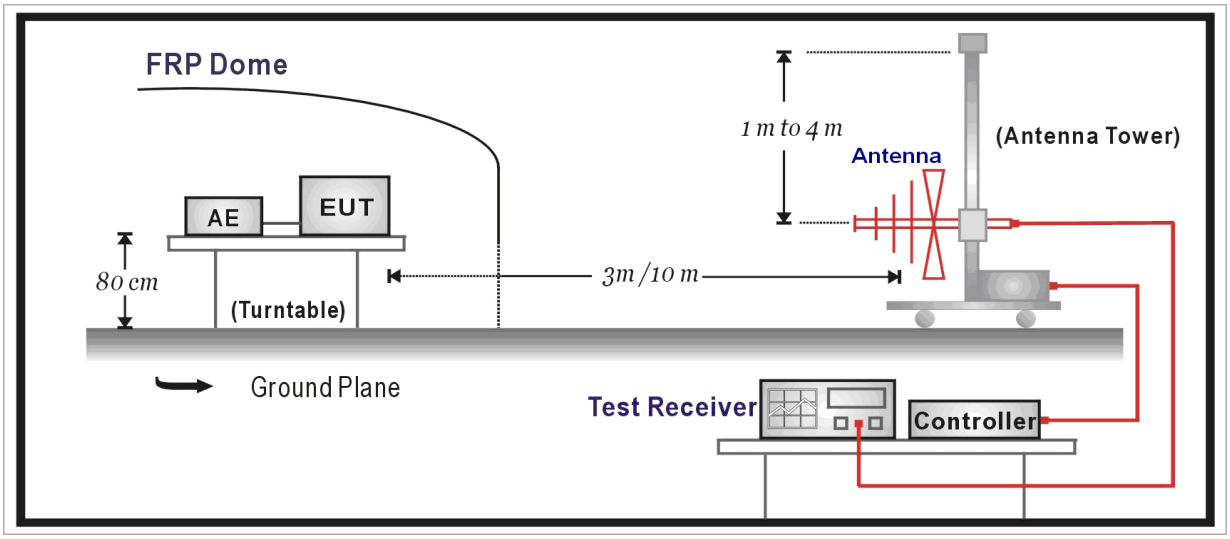
Note 1: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

5.2. Test Setup

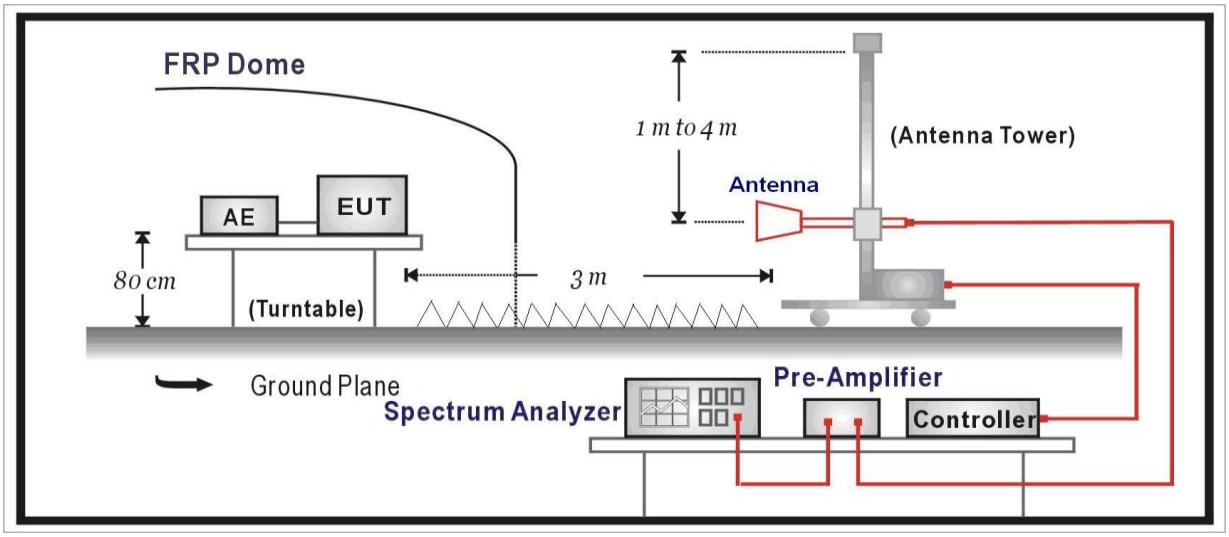
Below 30MHz Test Setup:



Below 1GHz Test Setup:



Above 1GHz Test Setup:



5.3. Limit

FCC Part 15 Subpart B Paragraph 15.109		
Frequency (MHz)	Distance (m)	Level (dBuV/m)
30 - 88	3	40
88 - 216	3	43.5
216 - 960	3	46
Above 960	3	54

Note 1: The lower limit shall apply at the transition frequency.

Note 2: Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

Note 3: E field strength (dBuV/m) = 20 log E field strength (uV/m)

5.4. Test Procedure

According to ANSI C63.10: 2009.
The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4: 2009 on radiated measurement.
The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.
The frequency range from 9kHz to10th harmonic is checked.
Note: When doing emission measurement above 1GHz, the horn antenna will be bended down a little (as horn antenna has the narrow beamwidth) in order to keeping the antenna in the “cone of radiation” of EUT. The 3dB beamwidth is 60~10 degrees for H-plane and 90~10 degrees for E-plane.

5.5. Uncertainty

The measurement uncertainty above 1G is defined as ± 3.9 dB
below 1G is defined as ± 3.8 dB

5.6. Test Result

All of the test result shown indicates the worst case, and spectrum analyzer parameters setting as shown below:
Peak detector: RBW = 1MHz, VBW = 3MHz, sweep time = 200ms;
Average detector: RBW = 1MHz, VBW = 10Hz, sweep time = auto.
Measure Level = Reading Level + Cable Loss + Antenna Factor - Preamplifier Gain

Mode5: Receive by 802.11n(20MHz) (Worse Case)

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
157	H	601.3	14.7	21.2	35.9	46	-10.1	QP
	V	800.2	14.3	22.8	37.1	46	-8.9	QP
	H	348.2	13.7	16.2	29.9	46	-16.1	QP
	V	456.3	14.4	18.9	33.3	46	-12.7	QP
	H	2215.5	53.9	-16.9	37.0	54(Note1)	-17.0	PK
	V	1629.0	55.3	-18.5	36.8	54(Note1)	-17.2	PK
	H	1875.5	51.6	-17.9	33.7	54(Note1)	-20.3	PK
	V	1280.5	51.9	-20.1	31.8	54(Note1)	-22.2	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.